



# Sub-Basin Urbanization and Habitat Characteristics

The Blanco Basin is subdivided into three smaller basins: the Cypress Creek, Upper Blanco, and Little Blanco and Basins. Although many of these characteristics could be viewed on a basin wide scale, each of the three sub-basins hosts unique topographical features, habitat types and ranges, and patterns of urbanization that can be clearly seen on a smaller scale.



Figure 45 Blanco River Basin Sub-basins.

## Blanco River Sub-Basins

The Cypress Creek sub-basin is at the easternmost or terminal portion of the Blanco Basin, while the Upper Blanco comprises the western portion of the basin where the headwaters are located and the Little Blanco contains a major tributary and is south of the Upper Blanco sub-basin.

## Sub-Basin Urbanization and Development

Population and associated urbanization in Texas in recent years are expected to more than double in the next 50 years. The Cypress Creek sub-basin has the largest potential growth area, including Wimberley, Woodcreek and parts of San Marcos and Kyle. The Upper Blanco Basin



has a smaller potential growth area surrounding the city of Blanco. Extra Territorial Jurisdiction (ETJs) may be viewed as a proxy for future areas of urbanization. Currently, very little development exists in the Lower Blanco and there are no major cities or ETJs present, but this is expected to change. It is likely that independently developed subdivisions and "ranchettes" derived from the subdividing larger ranches will comprise most of the growth in the Little Blanco Basin, which prohibits estimation of future development trends (although these development types are not limited to the Little Blanco Basin).

## Sub-Basin Riparian Slope

The existence of Riparian zones along rivers and streams are very important to the environmental health of aquatic habitats. These areas of vegetation lie within the flood plain along a rivers edge and function as buffer strips that absorb chemical and physical extremes. As pollution control or water treatment systems, riparian zones moderate the impacts of excessive nutrients like phosphates and nitrates, pesticides, and silt-laden runoff before they enter a stream. The roots of plants in this zone strip nutrients and contaminants from runoff. Water current is slowed through vegetation where fallen trees, brush, and suspended particles tend to settle. This type of debris in riparian zones acts as a water clarification system by filtering silt. During periodic flooding, healthy riparian vegetation aids in pulse stability of these physical events of perturbation<sup>1</sup>. The Blanco River has historically had trees which shade the water to influence temperatures and abate evaporation. Together with understory scrub growth, high density vegetation provides essential habitat crucial to maintaining populations of organisms both in and out of the water.

The topography of the Blanco River provides areas with low slope along the river where healthy or partial vegetation may allow riparian zones to function as buffers. However, there are areas of high slope along the water's edge that require mature vegetation due to the risks of high runoff velocities following storm events. Without this protection, sediments can be unloaded into the river in one catastrophic event. Loss of property along the river is also possible.

Examination of riparian slope topography by sub-basin of the Blanco River indicates sectors of the Blanco River where vegetative cover in riparian zones is very important. This study provides information on areas within the river basin where slope topography may be of concern. High percentages of slope require higher quality of riparian vegetation. Riparian zones with <5% slope are considered optimal; moderate and severe slopes have been labeled 5-10% and 10-15%, respectively; and extreme slopes of >15% labeled in red requiring high quality. In the Cypress Creek basin, sectors of extreme slope include areas immediately upstream of the confluence of Cypress Creek with the Blanco River and restricted portions on the southern side of the mainstem river. Without sufficient vegetation in the Little Blanco sub-basin, small portions south of the Little Blanco River could be considered at risk in areas with severe slope features and occasional extreme slopes. The area of most concern runs east of the rivers crossing the Kendall and Blanco County line. In the Upper Blanco sub-basin, areas of severe and extreme slopes in riparian zones reside almost exclusively in Kendall County.

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<sup>1</sup> Mackie, G. 2004. Applied Aquatic Ecosystem Concepts. Kendall/ Hunt Publishing Co. 2nd Edition. ISBN 0-7575-0883-9.

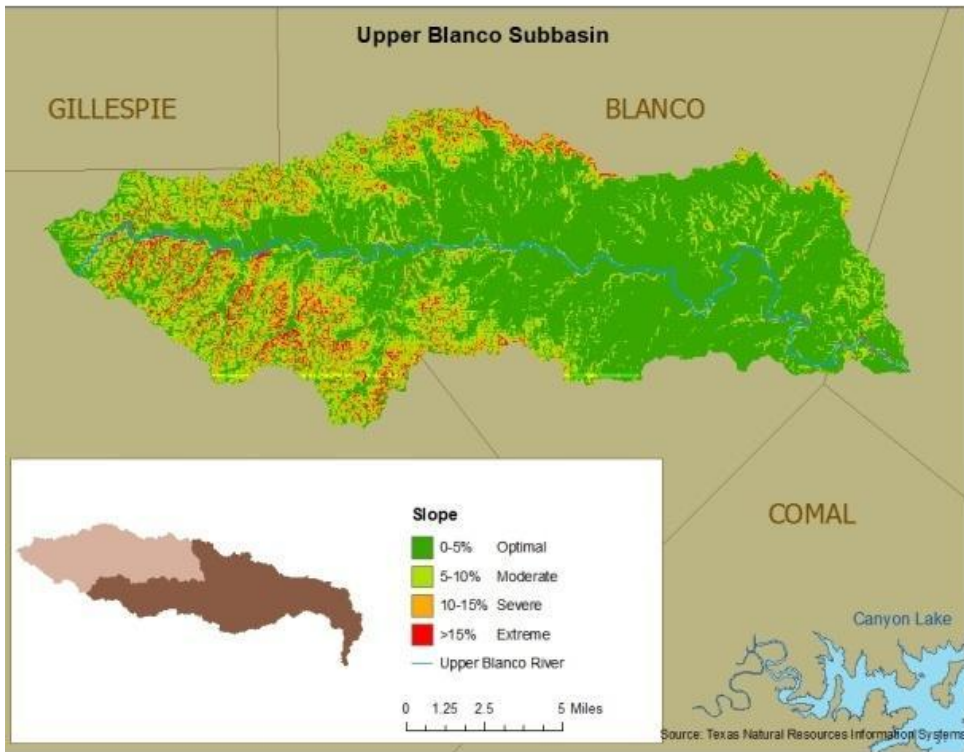


Figure 56 Upper Blanco Basin Slope

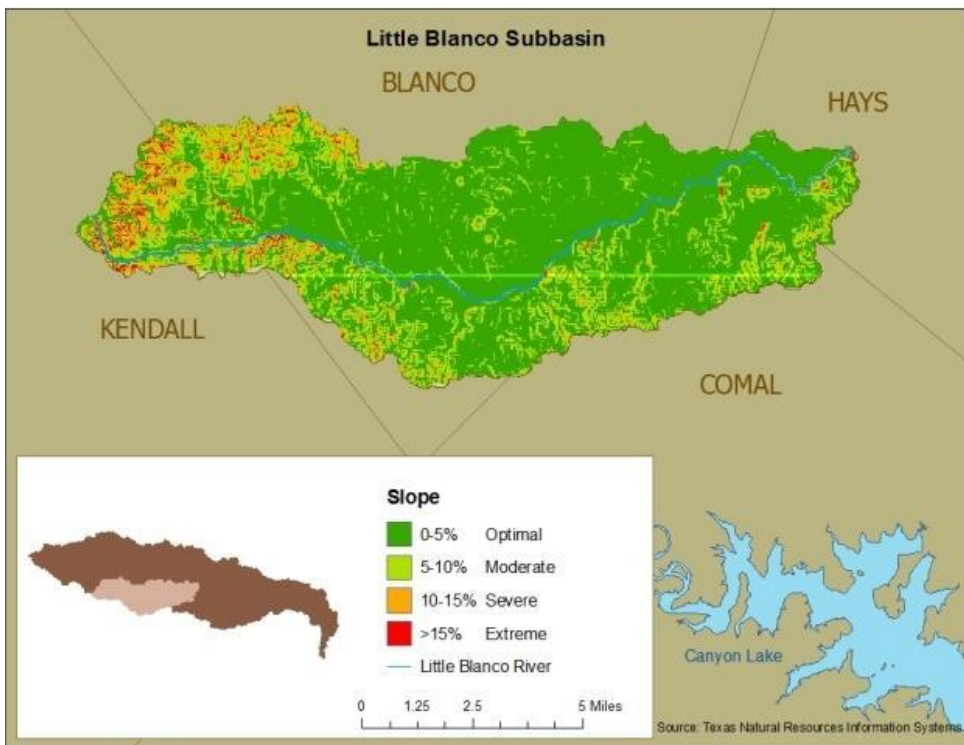


Figure 55 Little Blanco Basin Slope

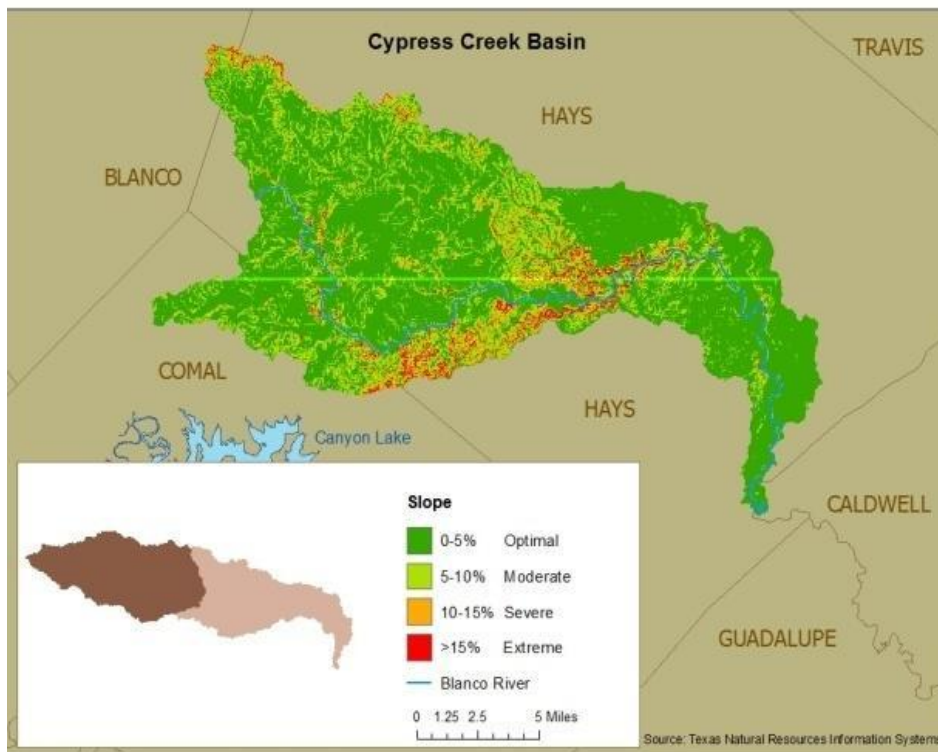


Figure 54 Cypress Creek Basin Slope

## Sub-Basin Critical Habitat Areas

The habitat ranges for several threatened and endangered bird species, as well as areas with heavy canopy cover and steep slopes, both of which provide habitat to a multitude of species. The yellow, orange and purple shaded areas in Figure 57 show habitat suitable habitat concentrations very close to and inside the ETJs for San Marcos Kyle, as well as along riparian corridors. With current and future development resulting in diminishing habitat, these areas will likely require conservation management in the near-future. Significant areas in the western portion of the basin show intact suitable habitat concentric to the river and fortunately several large stands of forest or canopy cover are distributed throughout the basin, providing additional habitat for other species. However, it may be noted that some of the forested regions have only small corridors connecting potential habitat patches.



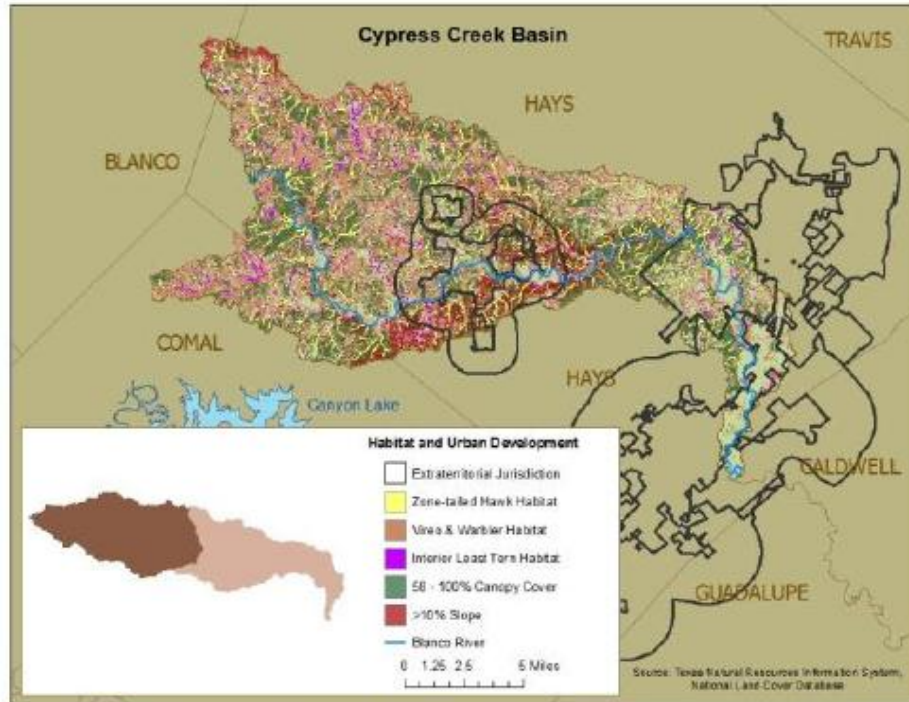


Figure 57 Cypress Creek Basin Selected Bird Habitats and ETJs.

The majority of land associated with wildlife habitat in the Upper Blanco Basin is concentrated along the central northern basin border, as well as the southwestern portion of the basin and along riparian corridors, well away from the ETJ of the city of Blanco (Figure 59). Small stands of trees and riparian habitat downstream of Blanco should be monitored for effects from increasing urbanization in the form of non-point source pollution run off and changed overland flow patterns.



Figure 59 Upper Blanco Basin Selected Bird Habitats and ETJs.

White-tailed deer habitats throughout the basin have become increasingly fragmented, despite large and possibly unsustainable population numbers. Axis deer, numerous small mammals, reptiles, birds and plants (some rare, threatened and endangered) also share the same habitat and grazing ranges. Figures 60 through 62 show known and potential habitat ranges coupled with urbanized areas and roads, shown in dark red. These areas fragment habitat and increasing development is likely to encroach upon habitat, lessening total available area. The interface between the urban zones and habitat shows potential interface between wildlife and human activities, which may also pose threats and lessen suitability for grazing and habitation.

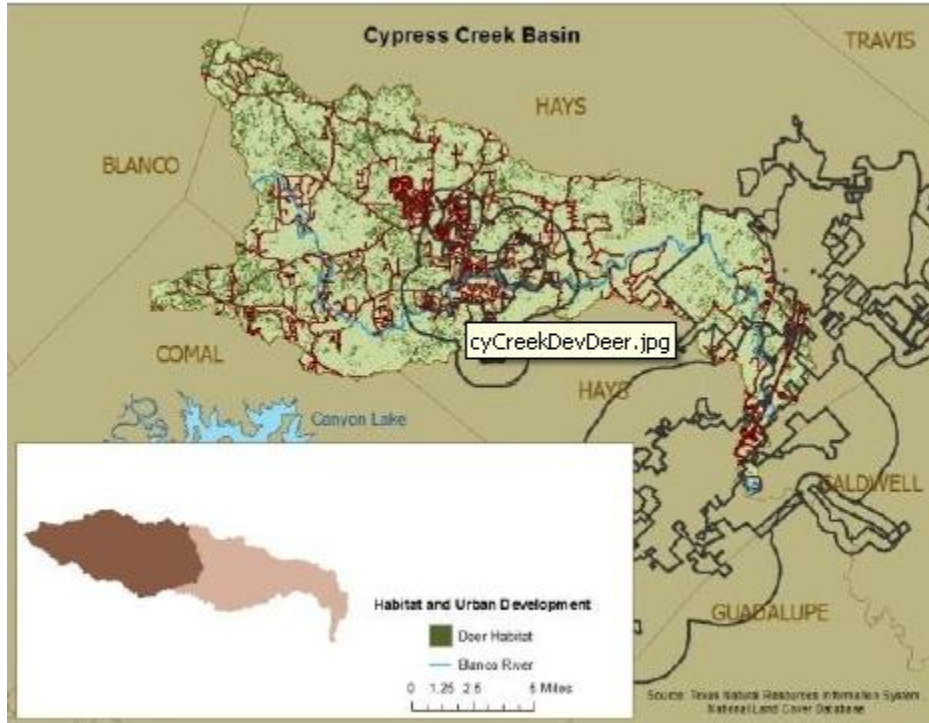


Figure 60 Cypress Creek Basin Deer Habitat Fragmentation



Figure 61 Little Blanco Basin Deer Habitat Fragmentation



*Figure 62 Upper Blanco Basin Deer Habitat Fragmentation*

Intense development in the Cypress Creek Basin intersects available habitat in the eastern, terminal end of the basin and throughout much of the southwest corner of the basin, as shown in Figure 60. Several relatively unaffected habitat patches appear in the far north and southwestern regions as well as just outside the San Marcos ETJs. The two former habitat areas provide potential areas for conservation and protection of wildlife (by minimizing development) while the habitat areas fringing urban growth areas may be of concern. The establishment and protection of wildlife corridors between those two regions may be of significant value in species protection.

Following the trend exhibited throughout this sub-basin, the Little Blanco shows little interface between its vast habitat areas and urban development (Figure 61). The northern edge and north western portion of the basin host the greatest habitat areas with little disturbance. Their condition has remained primarily intact due proximity to steep slopes less suited for development and lack of road access. However, several roads intersect the basin and occurring development is likely to follow those road paths, which could lead to habitat fragmentation and increased urban interaction.

The Upper Blanco Basin also follows the acknowledged trend of urbanization centered around the city of Blanco, with the majority of the roads constructed in the central portion of the basin (Figure 62). In this area, habitat is highly fragmented, but remains intact and relatively undisturbed in the western third of the basin. Development should be carefully managed in this area to minimize future disturbance and fragmentation.





## Recommended Development and Conservation Zones

In order to address the elements of concern and basin stresses identified by the Nature Conservancy<sup>2</sup>, maps were created to delineate zones where development and urbanization is not encouraged, based on the basin's topographical features. Developing in these areas could change overland flow patterns, increase soil erosion and instream sedimentation and non-point source pollution ultimately decreasing water quality, stream health and aquatic habitat. In addition, maps were created to identify development and conservation area recommendations based on known and suitable existing habitat ranges for several species including threatened and endangered birds, rare and common plants, deer and other mammals.

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<sup>2</sup> The Nature Conservancy (TNC) 2004. Conservation Area Plan for the Blanco River Basin. Unpublished.