## Willow thicket and Willow Scrub

**Willow thicket**

*From the Delta HE report:*

“This category includes broad stands of willow (Salix spp.), and occasional larger trees (e.g., cottonwood, Populus fremontii) that are usually associated with distributary channel networks at the base of alluvial fans and the margins of freshwater emergent wetlands (see discussion of “willow grove” in Goals Project 1999). Often, willow thickets (historically referred to as “sinks,” “sausal,” or “swamps”) grade into freshwater emergent wetland such that the boundary between the two is indistinct.”

“Perennially wet, dominated by woody vegetation (e.g., willows), emergent vegetation  
may be a significant component, generally located at the “sinks” of major  
creeks or rivers as they exit alluvial fans into the valley floor.”

“The willow thickets differ from the willow-fern swamps of the central Delta in terms of landscape position and fluvial influence as well as density and age class distribution of indicative plant species”

“One map labeled dense Tules within the sinks”

It is “Certain that willow and Tule were found scattered in patches throughout”

“The sinks should be thought of as a continuum from riparian forest lining the banks of the main channels to willow and other underbrush within the matrix of distributary channels to the Tule dominated wetlands of the basin.”

*Description*

This habitat is described as perennially wet, dominated by woody vegetation (willows). Emergent vegetation (Tules) may be a significant component (Figure 1), generally located at the sinks of major creeks or rivers as they exit alluvial fans into the valley floor. Taller trees including Goodding’s Black Willow and Fremont’s cottonwood should be interspersed, but relatively rare, forming less than 10% of total canopy (Figure 2).

As rivers and creeks entered the sinks they spread out into many “distributary” channels and lost their definition in the vegetation. This concept was represented on a number of historical maps (Figure 3).



Figure 1. Note emergent marsh vegetation interspersed with dense willows in patch of willow thicket along a channel.



Figure 2. Diagram of a dense willow thicket highlighting the presence of widely spaced trees forming an emergent canopy layer at low levels of cover. From www.riverpartners.org

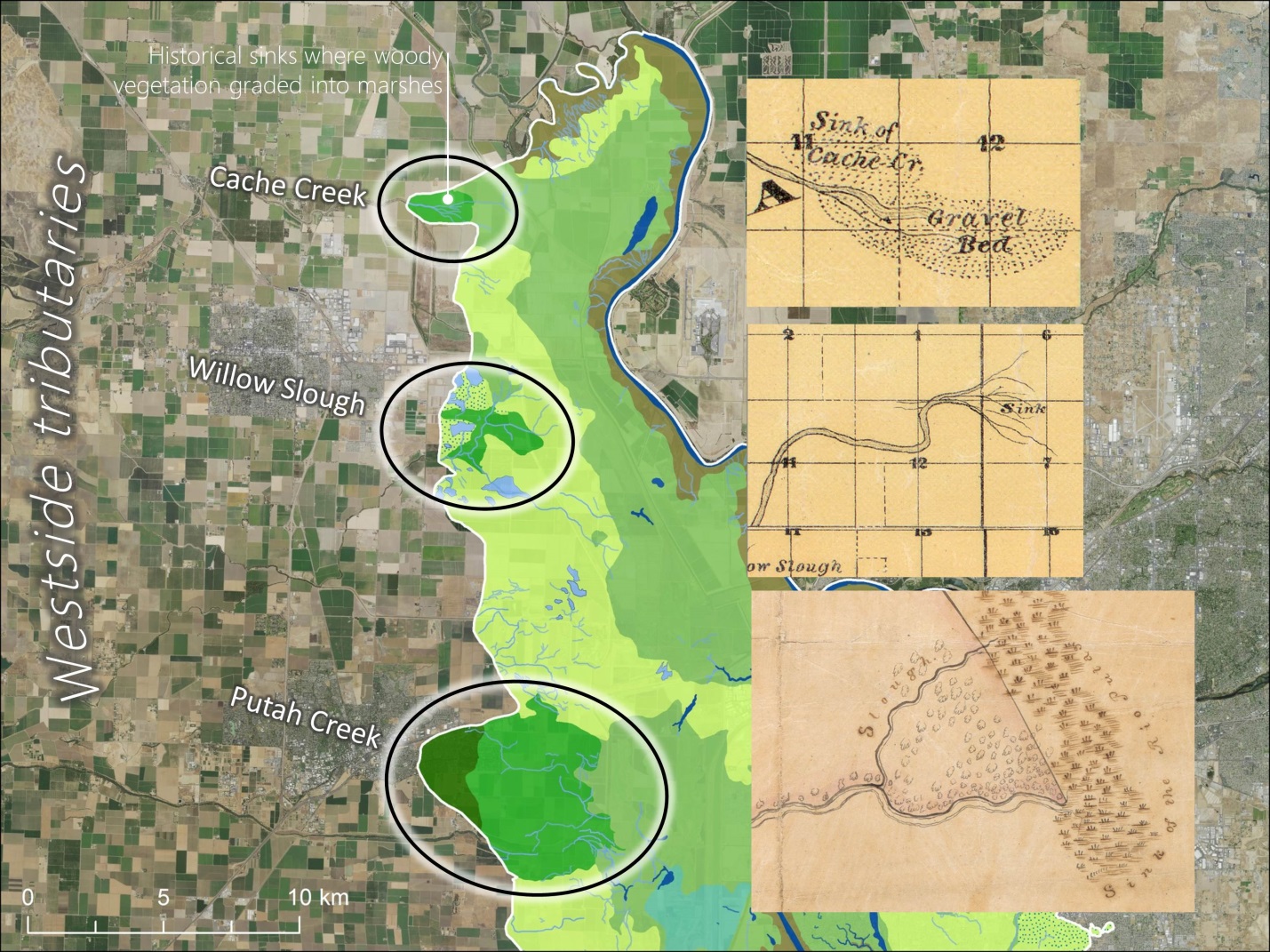


Figure 3. Historical maps showing how channels spread into and lost definition at their sinks. These locations are where the willow scrubs developed.

**Distinction between Willow thicket and willow scrub:** Willow thicket should have Tule scattered throughout whereas willow scrub should not have emergent marsh vegetation. A second distinction is that the willow thicket habitat should have tall trees (10-30 m). Within the willow scrub, tall trees should be absent.

**Willow scrub**

*Description*

This habitat is characterized by riparian vegetation dominated by woody scrub or shrubs with few to no tall trees (Figure 3). This habitat type generally occupies long, relatively narrow corridors of lower natural levees along rivers and streams. This habitat is described in the HE report as a “slightly drier habitat type with no emergent vegetation within the mix, more closely associated with channels”

*From River partners*

Lower on the floodplain, the mixed riparian forests become dominated by willows as the frequency and duration of flooding increases.  At this boundary, adjacent to the channel, Willow Scrub communities are formed.  The willow scrub communities are composed of the young, newly established willows and cottonwoods that can survive the frequent physical battering and inundation from flooding.  Sandbar willows (*Salix exigua*) are common in these communities, especially on point bars.  The presence of these willows allows finer sediments to accumulate, allowing additional riparian plants to establish.



Figure 4. Willow scrub habitat. Note absence of tall trees, and adjacency to channel. From www.riverpartners.org

The willow scrub habitat type might be thought of as a continuation of the Valley foothill riparian habitat type, where the height/stature of the trees decreases as you move downstream until the woody riparian habitats grade into the tidal marshes.