California Rapid Assessment Method for Wetlands (CRAM)

Episodic Riverine Photo Dictionary

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Central Coast Wetlands Group
at Moss Landing Marine Labs

ABUNDANT WRACK OR ORGANIC DEBRIS IN CHANNEL OR ALONG SHORELINE

Definition: Wrack is an accumulation of natural debris carried by wind or water. Organic debris includes loose fallen leaves, twigs, and seeds not yet transported by stream processes. This patch type does not include standing dead vegetation. The organic debris must be free of its original growth position. Senesced plant material that is still attached to the parent plant does not count as a patch type (for example, an annual grass thatch from the previous growing season).

ANIMAL MOUNDS AND BURROWS

Definition: Many vertebrates make mounds or holes as a consequence of their foraging, denning, predation, or other behaviors. Animal mounds can include those made by invertebrates (ants, termites, etc.). The resulting soil disturbance (bioturbation) helps to redistribute soil nutrients and influence plant species composition and abundance. To be considered a patch type there should be evidence that a population of burrowing animals has occupied the Assessment Area. A single burrow or mound does not constitute a patch.

BANK SLUMPS OR UNDERCUT BANKS IN CHANNELS

Definition: bank slump is a portion of a bank that has broken free from the rest of the bank but has not eroded away. Undercuts are areas along the bank that have been excavated by flowing water. Undercut banks are created through the action of water, wind, and gravity, independent of whether the stream contains water year-round. Crevices and bank slumps can be especially prevalent along ephemeral stream banks and provide desert wildlife refuge from predators as well as critical protection from extreme heat and aridity.

BIOTIC OR ALGAL SOIL CRUSTS

Definition: Biological crusts are soil communities of mosses, lichens, alga, fungi or cyanobacteria. They are typically found on fluvially-undisturbed surfaces and appear as soft, puffy, dark-colored growths (resembling popcorn). Biological soil crusts play a significant role in the process of formation, stability and fertility of soil, prevention of soil erosion caused by water or wind, augmentation of vascular plant colonization, and stabilization of sand dunes, especially in desert ecosystems.

COBBLES AND BOULDERS

Definition: Cobbles and boulders are rocks of different size categories. The intermediate axis of cobble ranges from about 6 cm to about 25 cm. A boulder is any rock having an intermediate axis greater than 25 cm. Exposed cobbles and boulders provide roosting habitat for birds and shelter for amphibians. They contribute to patterns of shade and light and air movement near the ground surface that affect local soil moisture gradients, deposition of seeds and debris, and overall substrate complexity.

DEBRIS JAMS

Definition: A debris jam is an accumulation of driftwood and other flotage across a channel that partially or completely obstructs surface water flow and sediment transport, causing a change in the course of flow.

COARSE WOODY DEBRIS

Definition: A single piece of woody material, greater than 10cm in diameter and greater than 1 meter long.

PANNES OR POOLS ON FLOODPLAIN

Definition: A panne is a shallow topographic basin lacking vegetation. Pannes fill with water at least seasonally due to overland flow to form pools. In episodic systems these can be highly transient, but still provide temporary habitat.

PLANT HUMMOCKS/SEDIMENT MOUNDS/COPPICE DUNES

Definition: Hummocks are mounds along the banks and floodplains of fluvial systems created by the collection of sediment and biotic material around plants. Sediment mounds are depositional features that lack plant cover and are formed from repeated flood flows depositing sediment on the floodplain. Coppice dunes are formed by the accumulation of wind-blown sand around and beneath vegetation. Hummocks, sediment mounds, and coppice dunes are typically less than 1 meter high.

POINT BARS AND IN-CHANNEL BARS

Definition: Bars are sedimentary features within fluvial channels. They are patches of transient bedload sediment that can form along the inside of meander bends or in the middle of straight channel reaches. They sometimes support vegetation. They are convex in profile and their surface material varies in size from finer on top to larger along their lower margins. They can consist of any mixture of silt, sand, gravel, cobble, and boulders.

POOLS OR DEPRESSIONS IN CHANNEL

Definition: Pools are areas along fluvial channels that are much deeper than the average depths of their channels and that tend to retain water longer than other areas of the channel during periods of low or no surface flow. When the channel is dry depressions are found in deeper parts of the channel, sometimes with evidence of prolonged water retention such as mud cracks, dried algae residue, or water marks.

SAND RIPPLES

Definition: Ripples are sedimentary features formed in fine-grained sediments from the interaction a moving fluid (air or water) with a mobile substrate (mostly sand-size sediment). As current velocity (or wind) increases over the fine-grained substrata, the streambed is molded into a predictable succession of ripple like bed forms (often associated with dunes). Ripples are relatively small sedimentary features within the channel or floodplain.

SECONDARY CHANNELS ON FLOODPLAIN

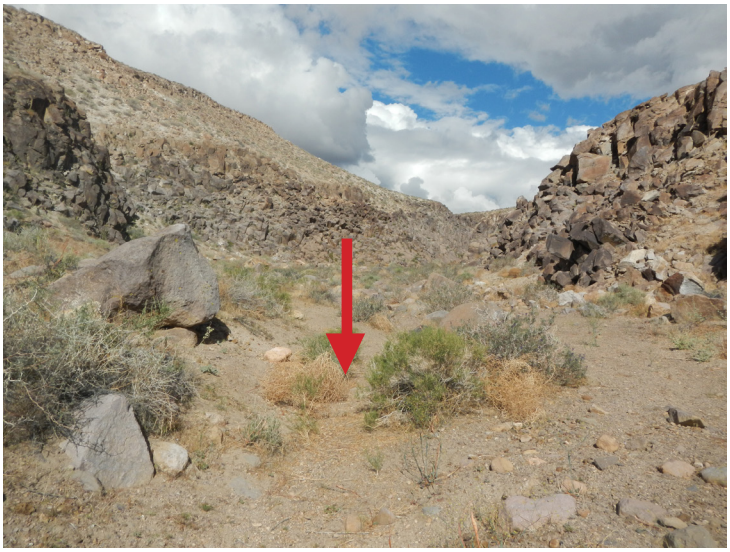
Definition: Channels confine riverine flow and consist of a bed and its opposing banks. The systems of diverging and converging channels that characterize braided and anastomosing fluvial systems usually consist of a primary (low-flow) channel that contains flowing water the most frequently and one or more secondary channels of varying sizes. Secondary channels (also known as overflow or high-flow channels) are usually topographically higher channels.

STANDING SNAGS

Definition: Tall, woody vegetation, such as trees and tall shrubs, can take many years to fall to the ground after dying. These standing "snags" provide habitat for many species of birds, small mammals, and invertebrates. Any standing, dead woody vegetation within the AA that is at least 3 m tall is considered a snag. These include cacti such as saguaro and pseudo-trees such as Joshua trees and palms.

SWALES

Definition: Swales are broad, elongated, sometimes vegetated, shallow depressions that can sometimes help to convey flood flows to and from floodplains to channels. However, they lack obvious banks, regularly spaced deeps and shallows, or other characteristics of channels. Swales can entrap water after flood flows recede. Swales that yield channel flow are important sources of water, sediment, nutrients, and other materials during runoff events.

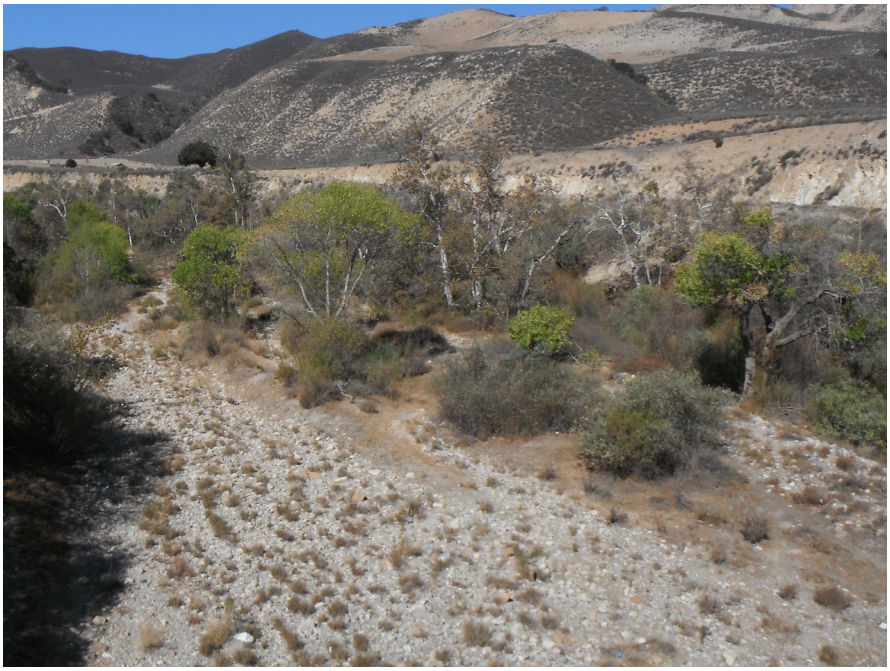


VARIEGATED, CONVOLUTED, OR CRENULATED CHANNEL MARGINS

Definition: As viewed from above, a stream channel can be mostly straight, broadly curving (i.e., arcuate), or variegated (e.g., meandering). In plan view, a variegated channel margin resembles a meandering pathway. Variegated channel margins provide greater contact between water and land. This can also be viewed on a scale smaller than the whole AA (2-3 m). Large boulders, exposed tree roots, and fallen vegetation along the margins can contribute to variegation.

VEGETATED ISLANDS
(Exposed at high water stage)

Definition: An island is an elevated body of land that is periodically surrounded by and isolated from the upland landscape by water. The unique habitats they provide are defined and generally formed by the water that surrounds shapes, and interacts with them. Islands differ from hummocks and other mounds by being large enough to support trees and large shrubs, and high enough to be exposed at the high water stage. Indicators of inundation such as wrack lines, water marks, and fresh sediment deposits should not be present.



WATER-CUTS ALONG CHANNELS

Definition: Water cuts are fluvial features that form along the inside margins of channels in a stair-step configuration to indicate fluctuating water levels, stream energy, and differential erodibility in substrates.