

Mapping Riparian Corridors in Central CA as a Reference for Assessing Riverine Health

Abstract:

Through the development of new tools to assess riparian habitat extent and condition, this project will pilot the State's Wetland and Riparian Area Monitoring Plan (WRAMP) to better manage riparian and riverine resources, integrate multiple monitoring and regulatory programs and stand as a model for rural and agricultural regions around the state. This proposal is in part a response to RB3's specific request to develop tools and capabilities that support their "Vision of Healthy Watersheds." Through a combination of GIS modeling and spatial analysis, we aimed at identifying riparian metrics of healthy undisturbed streams based on widely available remote sensing data layers. Digital elevation models (DEM's) and 4-band aerial imagery collected by the USDA NAIP (National Agriculture Imagery Program, 2014) served as the primary datasets from which products were derived. Results of the analysis indicate significant differences in riparian width, slope, and tree cover based on stream order. Additionally, we observed variability in tree cover vs. stream order in different areas of the RB3 zone, suggesting regional patterns based on different ecological zones.

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METHODS

Stream network is derived from a digital elevation model (DEM) and assigned a Strahler order number.

Streams are randomly selected and the active riparian zone is identified from NAIP infrared imagery. Lines perpendicular to the stream centerline are created to produce width measurements.

NDVI (Normalized Difference Vegetation Index) values are created from the NAIP infrared imagery and reclassified to match vegetation types. Buffered lines perpendicular to the stream centerlines (not shown) are used to extract vegetation data for each selected stream.

Slope percent is derived from a DEM and is extracted using buffered perpendicular lines

