

RAPID STREAM RIPARIAN ASSESSMENT PROTOCOL: A WILDLIFE BASED APPROACH TO ASSESSING STREAM HABITAT HEALTH

A presentation of a
protocol developed by
Peter Stacey et al.

Presented by:

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**WILD
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PROJECT**



GOALS FOR THE RAPID STREAM RIPARIAN ASSESSMENT METHOD

1. Assess overall ecological health with an emphasis on wildlife needs,
2. Provide consistent interpretations regardless of the field checker,
3. Provide guidance for future restoration, if necessary,
4. Be repeatable, so method can be used to monitor change in the ecosystem, and
5. Use indicators that are rapid to collect, don't require specialized experts, equipment, or laboratory testing.

User's Guide for the Rapid Assessment
of the Functional Condition of Stream-
Riparian Ecosystems in the
American Southwest

Peter B. Stacey, Allison L. Jones, Jim C. Catlin, Don A. Duff

Lawrence E. Stevens, and Chad Gourley



Users Guide and Database:

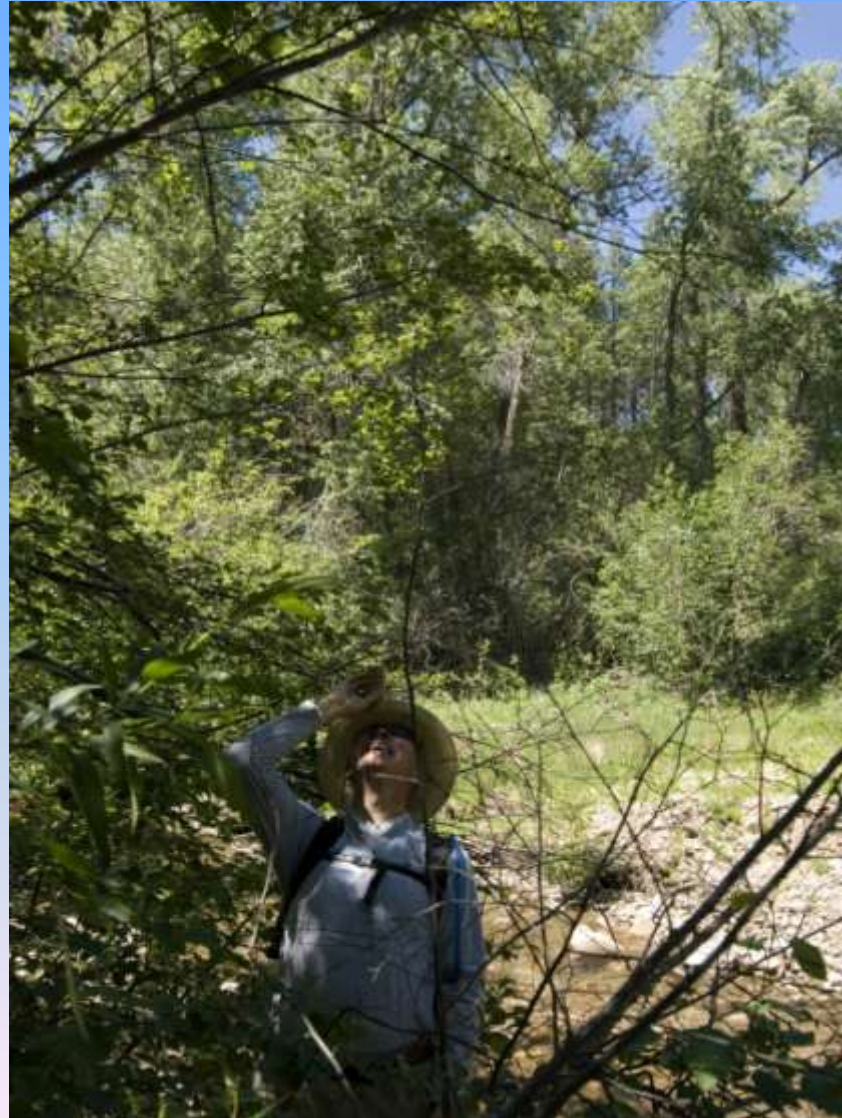
[http://wildutahproject.org/
programs/riparian/RSRA](http://wildutahproject.org/programs/riparian/RSRA)

- Online data on completed surveys
- Users Guide
- Field forms to use
- Upcoming training
- Peer reviewed publication on this method (Stevens et al. 2005)

Survey process

Steps

1. Determine reference and study stream reaches,
2. Gather background information,
3. Gather data on the field form,
4. Fill in the score sheet, and
5. Upload photos, forms and data to website.



Example: Ecological importance of the two Indicators

<p>Fish/Aquatic Habitat: Underbank cover</p>	<p>Underbank cover is an important component of good fish habitat, used for resting and protection from predators. A number of aquatic invertebrates also use these areas. Underbank cover usually occurs with vigorous vegetative riparian growth, dense root masses, and stable soil conditions.</p>
<p>Fish/Aquatic Habitat: Cobble embeddedness</p>	<p>Low levels of gravel and boulder embeddedness on the channel bottom increase benthic productivity and fish production. The filling of interstitial spaces between rocks with silt, sand, and organic material reduces habitat suitability for feeding, nursery cover, and spawning (egg to fry survival) by limiting space and macroinvertebrate production. Increased embeddedness often reflects increased sediment loads and altered water flow patterns.</p>

For each indicator, related scientific literature has been summarized in the users guide.

Example: Cobble Imbeddedness, Worksheet Entry

Three Representative Instream Riffle Sites

Collect the data for Indicators 10 and 11 at the same representative stream riffle locations (these sites may be different than those used for the other indicators. Make sure that these sites represent typical riffles in your reach.)

Indicator 10: Cobble Embeddedness (three representative riffles, examine six samples 3-8" in diameter per site).

Riffle site 1: Rock embedded _____ Average _____
(Optional) UTM E. _____ N _____

Example: Underbank Cover

Rapid Stream Riparian Assessment Field Worksheet, continued

In-stream 200 meter transect

Data for the following assessment indicators are collected on this transect:

Indicator 1 (Algal Growth),

Indicator 4 (Vertical Bank Stability),

Indicator 8 (Riffle-Pool Distribution),

Indicator 9 (Underbank Cover),

Indicator 12 (Large Woody Debris), and

Indicator 13 (Overbank Cover and Terrestrial Invertebrate Habitat).

Location: UTM E _____ N _____

(Optional Photo) Identification _____ Photo direction _____

Indicator 9: Underbank Cover.

Meters of underbank cover (include both sides) _____

Meters lacking underbank cover (include both sides) _____

Total _____ Percent of transect _____

FISH/AQUATIC HABITAT

Qualifier: If the stream is no longer perennial, but used to be a fishery, the mean score entered for this section is a "1." (It is no longer functioning as fish/aquatic habitat.)

	8	Riffle-Pool Distribution	<p>1 = no riffle-pool habitat in stream transect 2 = one to several riffle-pool systems 3 = limited to moderate riffle-pool distribution in reach 4 = moderate to abundant riffle-pool distribution 5 = riffle-pools abundant (>50% of transect has pools connected by riffles)</p>	<p>Check along 200m in-stream transect. Look for geomorphic consistency (e.g. high gradient streams will have more pools than low gradient streams).</p>
%=	9	Underbank Cover	<p>1 = no underbank cover in 200m stream transect 2 = <10% transect has underbank cover 3 = 10 - 25% of transect has underbank cover 4 = 26 - 50% of transect has underbank cover 5 = >50% of transect has underbank cover</p>	<p>Check along both banks of 200m in-stream transect. Undercut must be at least 15cm (6 in) into the streambank. Average the measures on both banks to score.</p>
%=	10	Cobble Embedded- ness	<p>1 = average of >50% of rock volume is imbedded in fine silt. (avg. of three sites) 2 = 41 - 50% of rock imbedded 3 = 26 - 40% of rock imbedded 4 = 20 - 25% of rock imbedded 5 = <20% of rock imbedded</p>	<p>Determine the percent embeddedness of a random sample of 6 rocks 3-8" in diameter from riffles in each of three different random points along the overall stream reach.</p>

Appendix 2: Rapid Stream-Riparian Assessment Score Sheet rev March 2006

Stream Manco's River Watershed Manco's Reach Lazy F/W Ranch
 Survey Date 1 July 2006 Time 09:00 Weather Clear
 Background information available? Observers P.B. Stacey, R.A. Stacey, T.R. Jones
 Contact Info: Address Dept of Biology, Univ. of NM Phone 505 277-0869 Email pstacey@unm.edu
 Reach (UTM) down Start 4133469 N 1250736257 E Length Surveyed _____
up Stop 4133877 N 1250736366 E _____
 Stream Transect Start 4153849 N 1250736373 E UTM zone _____
 Upstream or Downstream Down USGS Quad Map Name: _____
 Veg. Transect Upstream or Down? _____
 Reference Photos #1 _____ N _____ E _____
 #2 _____ N _____ E Reach Elevation 2055 up
2041 down
 OVERALL RATING: 2.3 CONDITION At risk
 Previous Ratings: DATE _____ Overall Score _____ Current Trend _____
 Individual Previous Scores WQ _____ HG _____ F/AH _____ RV _____ TWH _____

Score (1-5 or N/A)	Indicator number	Indicator	Scoring Definitions and Directions Scores of 5 indicate that the indicator is close to the potential of the geologically and biologically similar reference reach, and/or what would be expected to be found in a healthy ecosystem, a reference reach without anthropogenic disturbance. Scores of 1 indicate riparian or stream components that are not functioning properly. Use N/A if the indicator is not relevant or appropriate for this particular reach.	Notes on measurement methods
WATER QUALITY				
1	1	Algal Growth	1 = >50% of stream bottom covered by filamentous algae 2 = 26-50% of bottom covered by filamentous algae 3 = 11-25% of bottom covered by filamentous algae 4 = 1-10% of bottom covered by filamentous algae 5 = no filamentous algae on stream bottom <u>71%</u>	Use ocular tube and field worksheet to score 0.5m from bank every 2m in 200m in-stream transect. Do not count the single cell algae on the surface of rocks.
2	2	Channel Shading, Solar Exposure	1 = stream channel completely unshaded 2 = slight shading 3 = moderate shading 4 = substantial shading 5 = shading is geomorphologically consistent <u>3%</u>	Look up and down stream in three different representative points in the overall stream reach. Look for geomorphic consistency
Water quality mean score:		Notes:		
1.5				

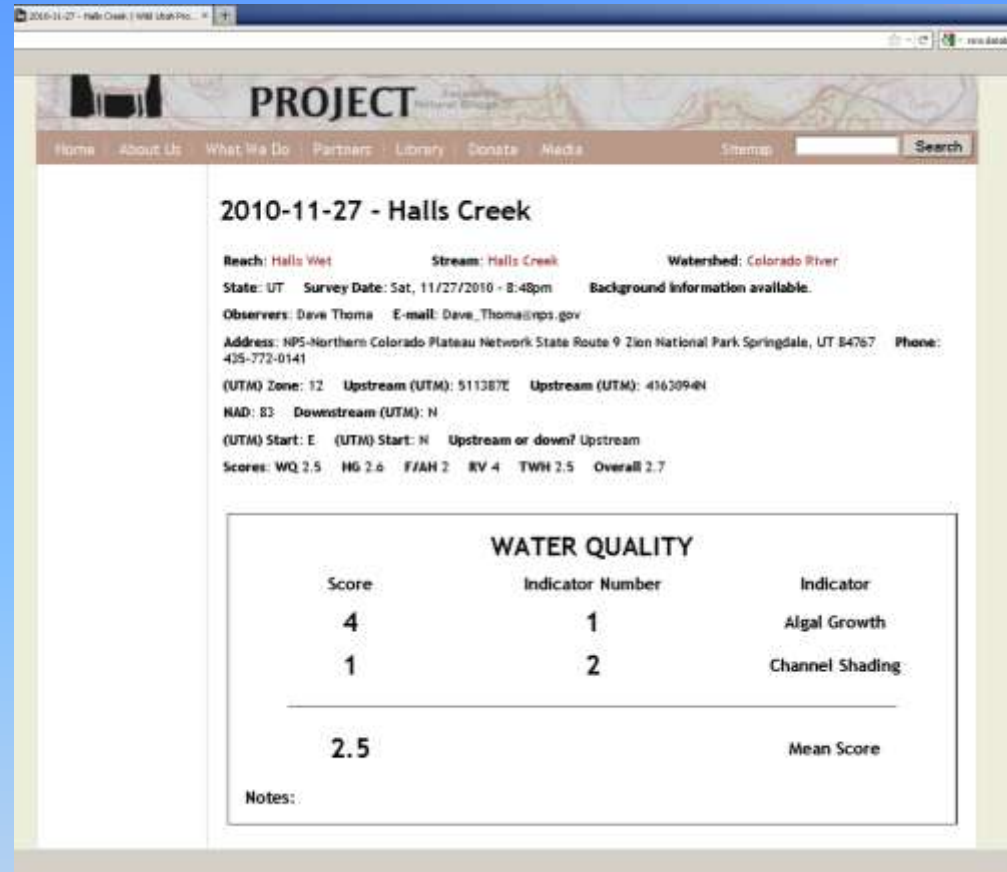
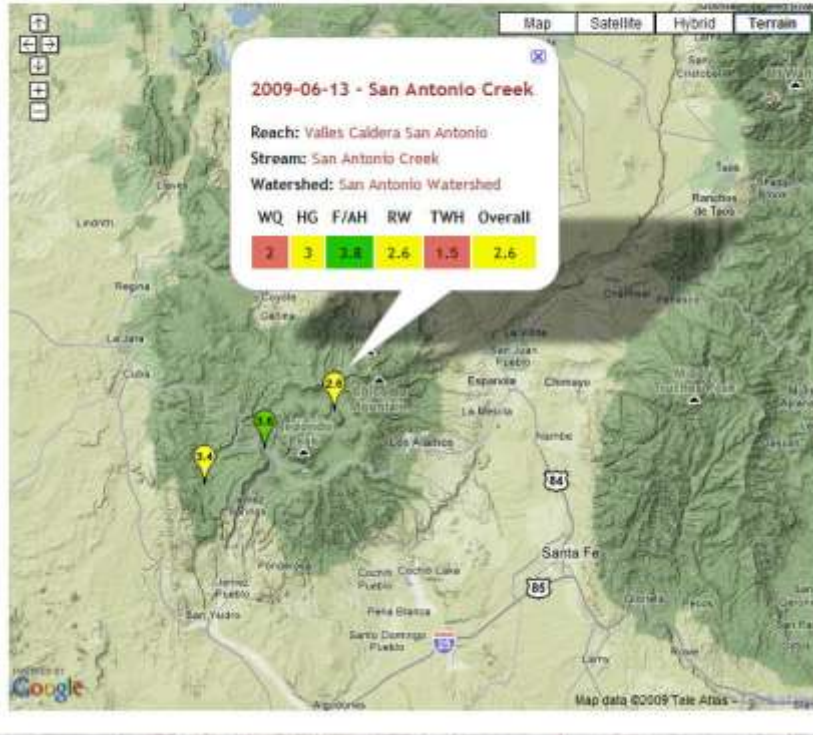
The completed worksheet records data that can be used for comparison in the future.

Worksheet data are then used to score all 25 indicators which are then averaged to rate the stream reach.



RSRA Map

This map illustrates the locations of the nodes on this website. Each marker indicates a node associated with a specific location.



Water Quality WQ
Hydrogeomorphology HG
Fish/Aquatic Habitat F/AH
Riparian Vegetation RV
Terrestrial Wildlife Habitat TWH

The purpose is to gain a general sense of the area. The averages for each of the 5 ecological categories is then averaged for an overall score. Detailed scores are actually more important in diagnosing a stream.

