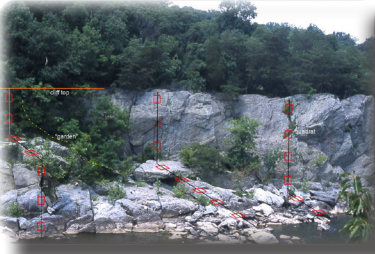
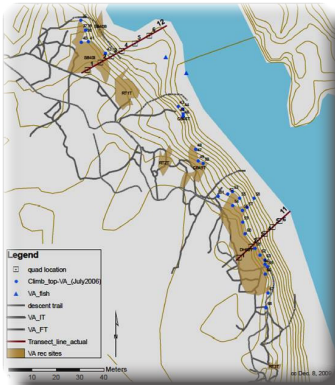


Assessing Recreational Impact to Cliff Habitats and Rare Plants



- **The Challenge:** The Potomac River Gorge, managed by the National Park Service in Virginia and Maryland, is a highly accessible protected natural area bordered by the intensively developed Washington metro region. The Gorge is biologically rich, with more than 400 occurrences of over 200 rare species. Potomac Gorge receives exceptionally heavy visitation, with nearly two million visitors recorded in 2000. This research assesses visitor impacts to its numerous and extensive cliffs, which include several miles of cliff-associated hiking trails and over 410 climbing routes (over 17,210 lineal feet) along a 4-mile stretch of the Potomac River. The Great Falls Park and Carderock crags are the premier climbing areas in the DC-Metro region.



- **The Science:** This research is evaluating the impacts of cliff-associated recreational activities on the vegetation and soils of the Potomac Gorge cliff environments. Both formal and informal (visitor-created) trails are being assessed to document their spatial extent and distribution and resource conditions, including attributes such as width and soil loss. Areas of more intensive trampling disturbance, such as cliff-base fishing sites, rock climbing staging and belaying sites, and cliff-top vista sites accessed by hikers, have also been assessed. Impacts to cliff plants have been assessed along 16 vertical transects on the cliff face, including identification and cover estimates for each plant species and data characterizing an array of environmental, physical, and use/impact attributes. A comprehensive survey of rare plants on the cliff-top, cliff-face, and base has also been conducted.



- **The Future:** Park managers will apply research results in developing management plans and actions designed to avoid or minimize the impacts of cliff-associated recreational activities. Off-trail traffic will be reduced and rare or sensitive plants will receive increased protection. Monitoring protocols will be applied to measure future recreation impacts and evaluate the efficacy of management interventions.