

Appendix A. Methods, List of Assessed National Park System Units, and Overall Scores for Each Assessed Park

Park Assessment Methods

Detailed descriptions of the CSOTP assessment approach, protocols, and ratings for both natural and cultural resource evaluations are available online at www.npca.org/stateoftheparks and can be conveniently downloaded as pdf documents.

In brief, the methodologies examine any and all available information that has a bearing on understanding resource conditions and/or protection threats. The resulting information is processed through ratings instruments for each discipline. The ratings instruments are a uniform set of 90 performance indicator questions for cultural resource assessment and 124 consistent and discrete evaluation elements for natural resource ratings. The evaluation process is initiated with a full-day workshop at each involved park unit, wherein the relevant National Park Service staff meet with CSOTP staff and contracted researchers (university partners or professional consultants) to discuss management plans, resource protection issues, data sources, research and monitoring programs, site history, local relations, park staffing and budget, and a host of resource and discipline-specific considerations.

Following the workshop, researchers compile and analyze relevant scientific literature, technical documents, monitoring data, system databases, expert opinion, and contextual information. The analyses are then summarized as fully referenced, technical reports (for both cultural and natural resources) and then further synopsisized as layman-friendly public reports which highlight resource conditions in light of the park setting, its history, its staffing and budget, its external challenges, the extent of volunteerism and local support, its interpretive capacity, and its resource management programs and activities. These public reports also serve to tell the stories of the parks in relation to park protection and provide readers with an understanding of each park's individual importance within the National Park System, their respective challenges, their valued programs, and their uniqueness to our American cultural and natural heritage. The reports are also invaluable in informing decisionmakers, from Congress to state and local authorities, about the needs and concerns associated with protecting our common inheritance. They are professionally written, designed, and published to convey, in an appealing narrative and graphic manner, the resonant and compelling tales of one of our most popular public institutions, the National Park Service. Individual CSOTP reports may be viewed and/or conveniently downloaded from our website, www.npca.or/stateoftheparks/.

A consistent feature of our individual park reports is the rating of resource conditions for both cultural and natural resources overall, as well as for categories within these disciplines. The ratings are reported as scaled, 0-100 numbers to facilitate both interpretation and comparison and immediately suggest whether park resources are threatened or not and to what extent they may be compromised. It should be recognized that although the ratings processes are rigorous, they do, of necessity, have a subjective component. On the basis of all available data, professional researchers employ some degree of judgment in determining whether and to what degree a particular performance indicator or resource element represents a concern. These ratings are reviewed by the

CSOTP natural and cultural resource program managers. In these regards, it is important to note that the ratings components of the CSOTP methodologies best represent a threats-based treatment of resource condition and most accurately reflect the degree or extent of concern associated with the ongoing protection of a specific resource issue or category. It should also be understood that the degree of subjectivity allowed in the rating of individual metrics and therefore the “roll-up” of resource categories is not open-ended but limited by design.

For example, the natural resources ratings scheme employs a 0-3 scale for evaluating individual metrics. That is to say, that with respect to any of the given 124 assessment elements or indicators (let us choose invasive species by way of example), either it is determined that there exists a concern (score = 0 or 1 or 2) or not (score = 3). If it is determined that there is a concern and the concern is chronic and/or ubiquitous and/or ongoing and not readily remedied, the score is “1.” Alternatively, if the concern is deemed to be more benign and/or limited and/or episodic and is reasonably subject to mitigation, the score is “2.” The “0” score has yet to be applied in our work, but is reserved for the case in which a resource element is irretrievably compromised, regardless of management effort or realistic fiscal expenditure.

On the cultural resource side, the scoring is appropriately more subjective and reflects on a 0-10 basis for individual performance indicator questions, the extent to which park conditions, plans, staff, and fiscal resources are employed to identify, preserve, catalog, register, protect, and/or interpret historical, archaeological, landscape, or ethnographic resources and relationships. Roughly 15 percent of overall cultural resource performance indicators are directly reflective of resource condition per se. In this light, cultural resource assessment scores are best interpreted as how well parks are equipped to meet the standards established by the National Park Service’s *Cultural Resource Management Guideline* and other federal policies related to cultural resources protection.

National Park Units Assessed

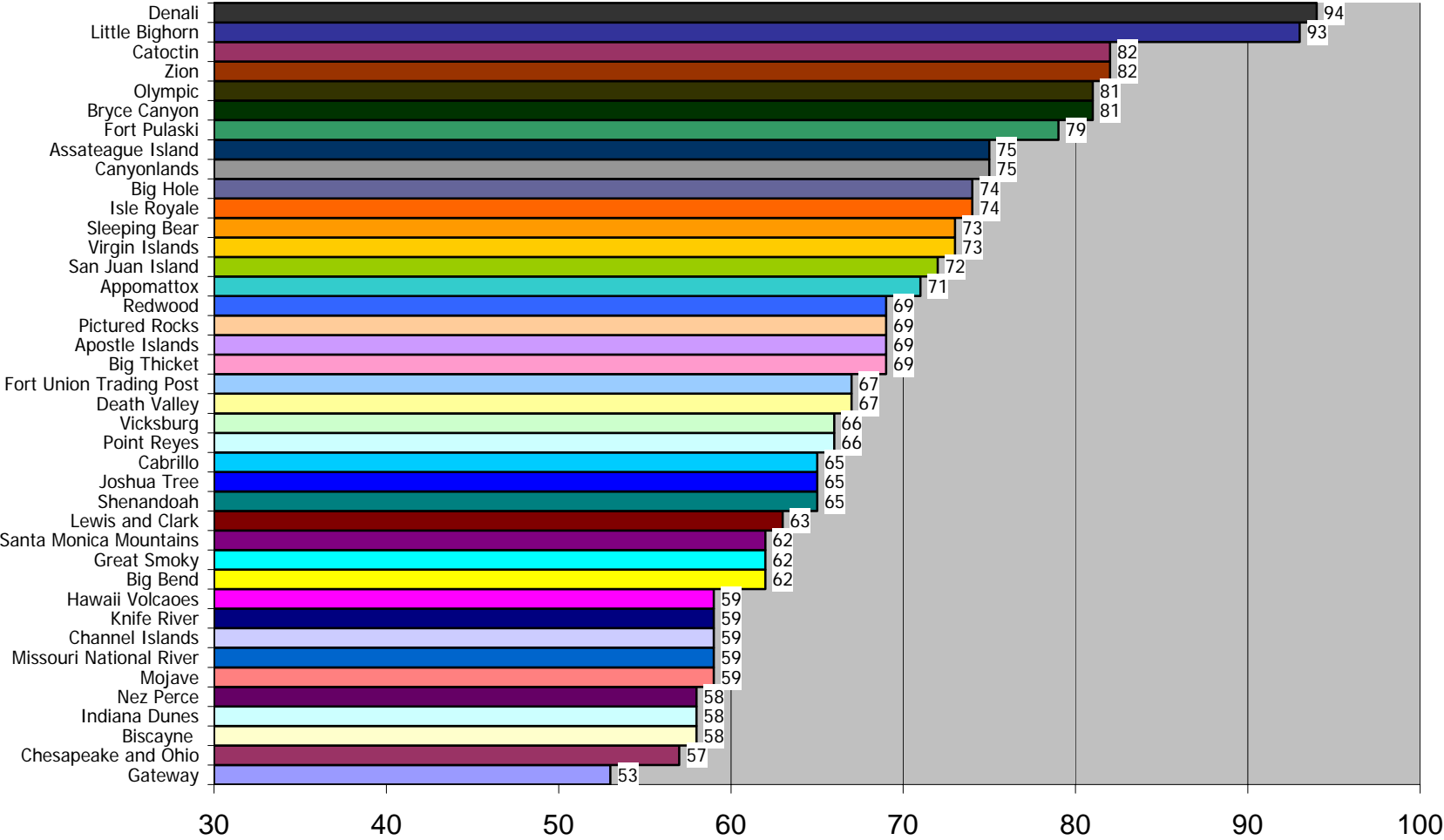
Adams National Historical Park (MA)
Andersonville National Historic Site (GA)
Appomattox Court House National Historical Park (VA)
Apostle Islands National Lakeshore (WI)
Assateague Island National Seashore (MD, VA)
Big Bend National Park (TX),
Big Hole National Battlefield (MT)
Big Thicket National Preserve (TX)
Biscayne National Park (FL)
Bryce Canyon National Park (UT)
Cabrillo National Monument (CA)
Canyonlands National Park (UT)
Catoctin Mountain Park (MD)
Channel Islands National Park (CA)
Chesapeake and Ohio Canal National Historical Park (DC/MD/WV)
Death Valley National Park (CA)

Denali National Park and Preserve (AK)
Fort Laramie National Historic Site (WY)
Fort Necessity National Battlefield (PA)
Fort Pulaski National Monument (GA)
Fort Union Trading Post National Historic Site (ND)
Frederick Douglass National Historic Site (DC)
Gateway National Recreation Area (NY)
Great Smoky Mountains National Park (TN/NC)
Hawaii Volcanoes National Park (HI)
Hopewell Furnace National Historic Site (PA)
Indiana Dunes National Lakeshore (IN)
Isle Royale National Park (MI)
Joshua Tree National Park (CA)
Keweenaw National Historical Park (MI)
Knife River Indian Villages National Historic Site (ND)
Lewis and Clark National Historical Park (OR)
Lewis and Clark National Historic Trail (various)
Little Bighorn Battlefield National Monument (MT)
Longfellow National Historic Site (MA)
Missouri National Recreational River (NE)
Mojave National Preserve (CA)
Nez Perce National Historical Park (WA, ID, MT, OR)
Olympic National Park (WA)
Pictured Rocks National Lakeshore (MI)
Point Reyes National Seashore (CA)
Redwood National and State Parks (CA)
Rocky Mountain National Park (CO)
Saint-Gaudens National Historic Site (NH)
San Juan Island National Historical Park (WA)
Santa Monica Mountains National Recreation Area (CA)
Shenandoah National Park (VA)
San Antonio Missions National Historical Park (TX)
Sleeping Bear Dunes National Lakeshore (MI)
Vicksburg National Military Park (MS)
Virgin Islands National Park (U.S. Virgin Islands)
Virgin Islands Coral Reef National Monument (U.S. Virgin Islands)
Waterton-Glacier International Peace Park (MT-Alberta)
Zion National Park (UT)

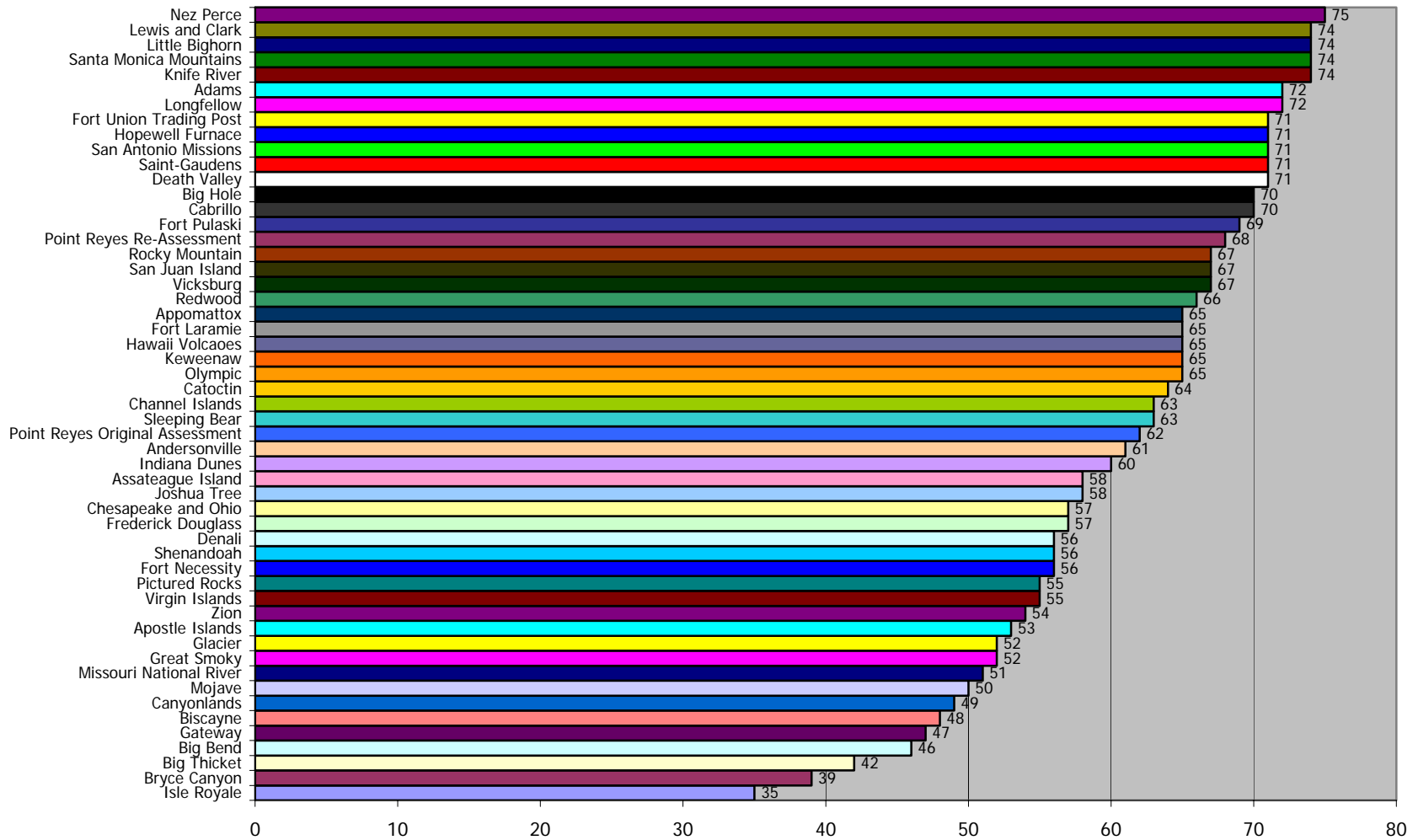
Overall Scores for Each Assessed Park

Following are charts depicting the overall natural resources and cultural resources scores for each national park assessed by the Center for State of the Parks. These scores were used in the formulation of the National Parks Resource Index.

NPRI Overall Natural Resources Ratings



NPRI Overall Cultural Resources Ratings



Appendix B. Use and Interpretation of the National Parks Resource Index

The National Parks Resource Index and its component parts—the Natural Resource Index and Cultural Resource Index—provide much insight into the current conditions of a sampling of our country’s national parks, but it is extremely important that index values be reported and interpreted with respect to the factors that underlie their development and describe their reliability. To ensure proper treatment in these regards, the indices are communicated and evaluated with reference to:

- *The set of National Park System Units in the base ratings data.*
To what extent do the park units in the dataset represent the park system as a whole or a desired sub-set of selected interest?
- *The adequacy of information associated with the base ratings data.*
To what extent have the information requirements associated with the CSOTP methodology been met?
- *The statistical confidence (descriptive and error terms) associated with the mean values that the indices represent.*
To what extent do the NPRI averages represent the population of parks sampled and the park system at large?

Capturing the Diversity of the National Park System

As noted previously in the report text, the diversity of the current 391 units of the National Park System is exceptional and suggests that identifying a “typifying” unit is not tenable. However, developing a set of units that reflects the depth and breadth of diversity within the system is possible. Based on the factors above, we (CSOTP) have developed a list of 160 units (Appendix C) that are reasonably representative of the system as a whole. Our assessment work to date—54 units evaluated for cultural resources and the 44 units evaluated for natural resources—reflects only a little more than a third of this representative set and is not yet considered to be inclusive of the considerable variety inherent in the National Park System. As more park units are assessed over time, the indices will reflect an ongoing and increasingly improved understanding of resource conditions in our national parks and our confidence in the ability of the indices to reflect system-wide conditions will increase. It should also be recognized that only at such time as either all park units or a representative sub-set of parks are assessed and re-assessed, can meaningful analysis of change using the indices be accomplished.

Even with these qualifying parameters in place, it appears that analysis of our existing assessment sample has uncovered telltale and important findings. These findings were discussed in detail in the body of *The State of Our National Parks: A Resources Index*.

Lack of Information Limits Resource Assessment

Discrete elements of the natural resource assessment ratings or performance indicators for cultural resource assessments are often not ratable because of a lack of relevant information. In the case of cultural resources, where information is inadequate, the indicator is simply not rated. It is presently not possible to differentiate between whether a given performance indicator is not applicable to the park unit under evaluation or whether there is simply insufficient data to make an informed rating decision. Future reporting will feature this distinction.

In the case of natural resources, all relevant elements are rated. When there is not enough information to rate an element, it is classified with the term “insufficient data.” After all relevant information is collected for a particular park and an overall score is calculated, we calculate the percentage of information required by the methodology that was actually available. Elements classified as “insufficient data” are considered to be data gaps. For example, a park may receive an overall natural resources score of 80, but this score may be based on just 60 percent of the information required by the methodology (40 percent of the information is unavailable and classified as “insufficient data”). Overall, for natural resources in this sample of 44 park units, our ratings are based on 73 percent of the information that we deem necessary for understanding resource conditions. Gaps in our understanding may also represent gaps in the information necessary to properly manage resources.

At present, it appears that resource management in our national parks may be handicapped by a paucity of soil and soil processes data (49.1 percent data adequacy), consistent and ubiquitous water quantity and quality data (61.2 percent data adequacy) and even air quality (60.4 percent data adequacy). These latter findings are somewhat surprising because the air quality monitoring effort on the part of the National Park Service, its partners, and collaborators is likely the most consistent, widespread, and effective program of its ilk in the Park Service. Nonetheless, there is a lack of fundamental data on mercury and volatile organics, as well as appropriate site (individual park units) and pan-system coverage. These deficiencies are a direct function of insufficient funding for adequate numbers of monitoring sites and personnel to collect, process, and interpret data.

In a similar fashion, water quality and quantity data necessary for understanding park conditions and threats suffer from a lack of ongoing, consistent, and ubiquitous data. Information has been collected as funding, personnel availability, and other variables allow, which has resulted in an incomplete, scattered, and unreliable understanding of water availability and quality in our parks.

Soil studies outside of fundamental surveys and classifications work are largely lacking at parks. Substantive ecological understandings could be gained from consistent soil monitoring for chemical, microbiological, and pollutant changes.

Describing the Statistical Confidence

The mean values, standard deviations and standard errors of the mean have been calculated across all units assessed for each cultural resource performance indicator and natural resource element, each category of the respective resource types, and for each resource type overall. They are reported, as applicable, within *The State of Our National*

Parks: A Resources Index, along with the number of scores upon which the mean is based and the range of scores represented.

Re-assessment and Tracking

The Center for State of the Parks plans to re-evaluate resource conditions in previously assessed park units on a five-year basis. Over time, re-assessment data will allow us to continuously update the resource indices by incorporating incremental change in the status of our methodological indicators. More importantly, re-assessment data will facilitate analysis of the nature and degree of change, system-wide, for park resource conditions. At the point when the number of re-assessments equals a viable comparative set (based on the determination of a selected or representative mix of park units), higher-order statistical procedures such as Analysis of Variance (ANOVA) can be employed to evaluate the significance of change. Again, it is emphasized that tracking change in resource conditions through time is a function of re-assessment and representative data-set considerations.

Current Understandings

In a purely statistical sense, with the addition of new park rating scores for each assessment it becomes increasingly more difficult to influence the mean value while simultaneously, confidence in the mean (NRI and CRI values) increases. Figures 1, 2, and 3 demonstrate these understandings as the cumulative mean values and their associated error terms level out and become increasingly more constant.

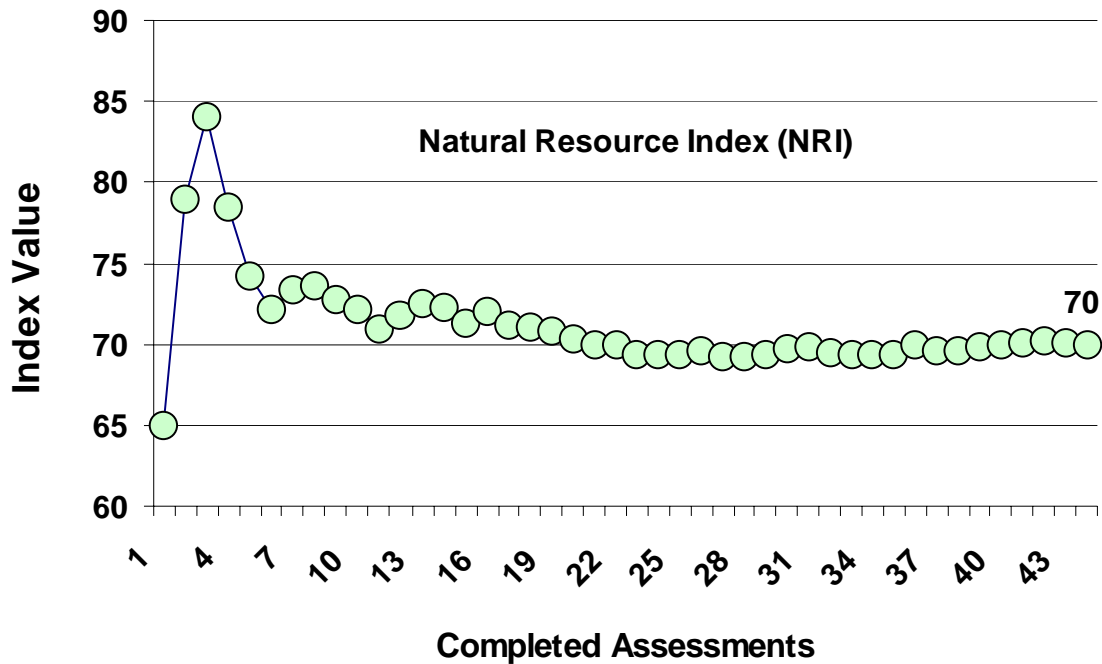


Figure 1. Cumulative Natural Resource Index (NRI) Values

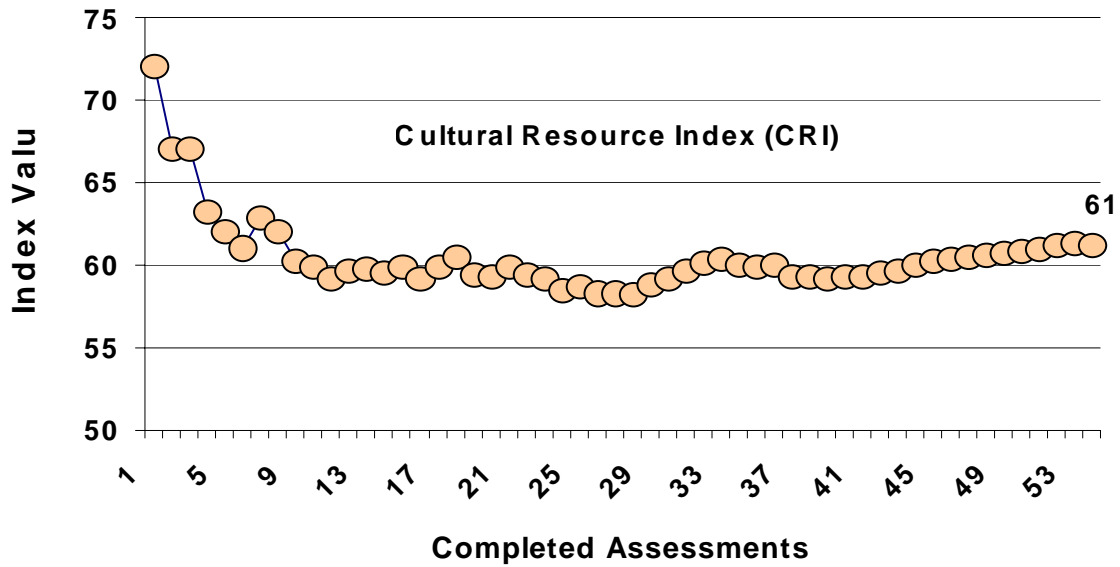


Figure 2. Cumulative Cultural Resource Index (CRI) Values

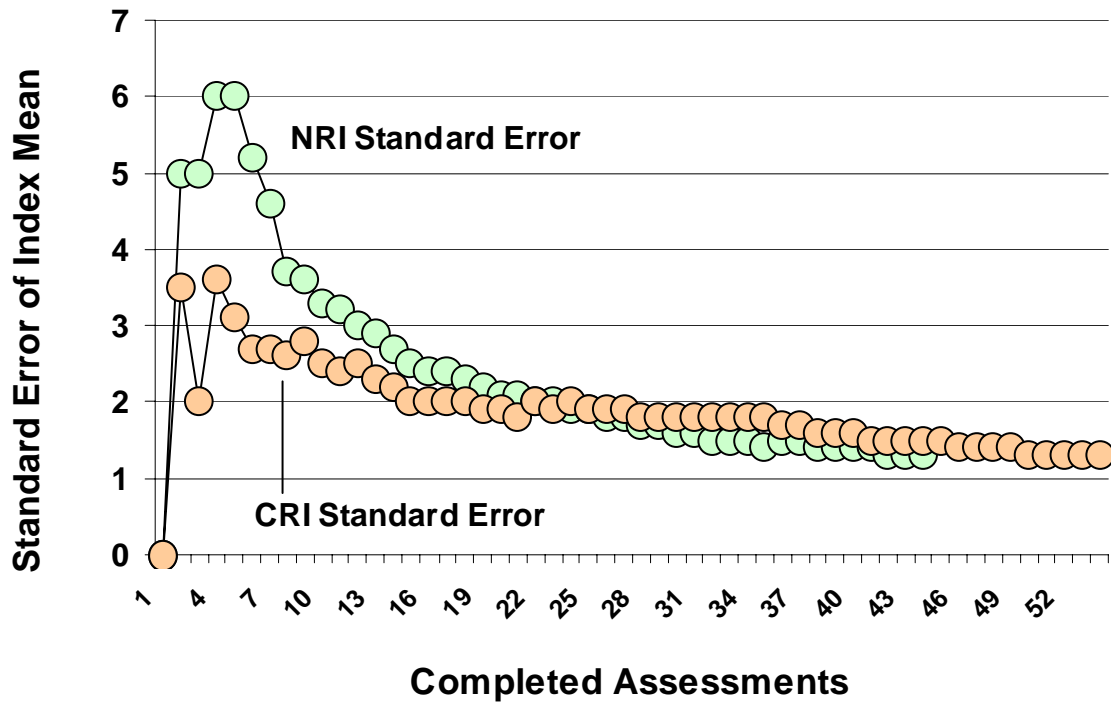


Figure 3. Standard Errors of the Cumulative National Parks Resource Indices

With comparison, the cumulative index values of Figures 1 and 2 yield two immediate observations. The first is the quite evident disparity in the relative values of the two indices. The CRI is substantially and consistently lower than the NRI. This observation has prompted us to ask the fundamental question(s): is this an artifact of the

difference in natural and cultural resource methodologies, a reflection of the mix of park units in our current assessment data set, or does it reflect a very real difference in the condition of or degree of threat to these resource types across the board? After careful consideration and much attention we are persuaded that the differences are quite real and are most likely related to a systemic resource bias. This is not to imply that the bias is intentional, just to report that it exists.

The cultural resources methodology is based on the National Park Service's own management guidelines and directives and has a strong emphasis on the existence, currency, and relevance of management plans for protecting historic and cultural features. It also prominently evaluates park staffing levels relative to cultural resource inventory, preservation, and care needs. With the limited exception of park units established solely or in largest part for their cultural values, we have documented noteworthy and consistent deficits in these regards. Further, the relatively recent and to date quite successful introduction of the Natural Resources Challenge within the National Park Service has widened the gap between the level of funding and subsequently the protection emphasis between resource categories within the parks.

The second immediate observation from inspection of Figures 1 and 2 is the initial rapid change in the values of the indices (albeit it in opposite directions) associated with the initial few assessments, followed by a relatively modest incremental change with the addition of subsequent assessment data. This is an artifact of the proportionately greater importance to the means (index values) of each early addition of resource scores, relative to the sample size. As the body of increasing resource scores (sample size) increases, the relative weight of each new score on the mean is proportionately decreased.

This understanding makes it tempting to conclude that the addition of new and more assessment data will not result in substantially altered index values over time. Provided that our representative confidence in the index values were very high, we would be satisfied that we were close to a reasonable approximation of current system-wide conditions. That appears to be and may prove to be the case, however, we also recognize that our present sample is only a third of the sample that our analysis suggests would be sufficient to adequately and with inclusive confidence reflect the system as a whole.

We choose to report now because the sample likely does capture the existing pre-eminent and system-wide threats, issues, and concerns challenging the protection of resources in our parks now and into the immediate future. The nature of the most fundamental and ubiquitous threats suggests that the stakes are simply too high not to advertise these understandings now.

Although the index values themselves are important in understanding and communicating a general, system wide sense of resource conditions in our parks, it is the analysis of assessment categories and even discrete elements of the assessment methodologies that are of principal importance, because they provide insight into what is driving the resultant index values. Further, analysis at the detail level of our assessments allows for defining the most critical and ubiquitous threats (and threat sources) that are currently problematic and likely to be into the future, to the ongoing protection of park resources and values.

Appendix C. Strategic List of 160 National Park Service Units to Assess

National Park Service Unit	NPS Designation	NPS Region
Abraham Lincoln Birthplace NHS	National Historic Site	Southeast
Acadia NP	National Park	Northeast
Adams NHP	National Historical Park	Northeast
Agate Fossil Beds NM	National Monument	Midwest
Andersonville NHS	National Historic Site	Southeast
Andrew Johnson NHS	National Historic Site	Southeast
Apostle Islands NL	National Lakeshore	Midwest
Appalachian NST	National Scenic Trail	Southeast
Appomattox Court House NHP	National Historical Park	Northeast
Assateague Island NS	National Seashore	Northeast
Badlands NP	National Park	Midwest
Bandelier NM	National Monument	Intermountain
Big Bend NP	National Park	Intermountain
Big Hole NB	National Battlefield	Intermountain
Big Thicket National Preserve	National Preserve	Intermountain
Biscayne NP	National Park	Southeast
Brown v. Board of Education NHS	National Historic Site	Midwest
Bryce Canyon NP	National Park	Intermountain
Cabrillo NM	National Monument	Pacific West
Cane River Creole NHP	National Historical Park	Southeast
Canyon de Chelly NM	National Monument	Intermountain
Canyonlands NP	National Park	Intermountain
Capitol Reef NP	National Park	Intermountain
Carl Sandburg Home NHS	National Historic Site	Southeast
Carlsbad Caverns NP	National Park	Intermountain
Casa Grande Ruins NM & Hohokam Pima NM	National Monument	Intermountain
Castillo de San Marcos NM & Ft Matanzas NM	National Monument	Southeast
Catoctin Mountain Park	Park	National Capital
Chaco Culture NHP	National Historical Park	Intermountain
Channel Islands NP	National Park	Pacific West
Chesapeake & Ohio Canal NHP	National Historical Park	National Capital
Chickamauga and Chattanooga NMP	National Military Park	Southeast
Colorado NM	National Monument	Intermountain
Cowpens NB	National Battlefield	Southeast
Crater Lake NP	National Park	Pacific West
Craters of the Moon NM	National Monument	Pacific West
Cumberland Island NS	National Seashore	Southeast
Cuyahoga Valley NP	National Park	Midwest
Death Valley NP	National Park	Pacific West
Delaware Water Gap NRA	National Recreation Area	Northeast
Denali NP & Preserve	National Preserve	Alaska
Devils Tower NM	National Monument	Intermountain

Dinosaur NM	National Monument	Intermountain
Effigy Mounds NM	National Monument	Midwest
Eisenhower NHS	National Historic Site	Northeast
Everglades NP	National Park	Southeast
Florissant Fossil Beds NM	National Monument	Intermountain
Fort Donelson NB	National Battlefield	Southeast
Fort Frederica NM	National Monument	Southeast
Fort Laramie NHS	National Historic Site	Intermountain
Fort Necessity NB	National Battlefield	Northeast
Fort Pulaski NM	National Monument	Southeast
Fort Sumter NM	National Monument	Southeast
Fort Union Trading Post NHS	National Historic Site	Midwest
Fossil Butte NM	National Monument	Intermountain
Frederick Douglass NHS	National Historic Site	National Capital
Friendship Hill NHS	National Historic Site	Northeast
Gates of the Arctic NP & Preserve	National Preserve	Alaska
Gateway NRA	National Recreation Area	Northeast
George Washington Birthplace NM	National Monument	Northeast
George Washington Carver NM	National Monument	Midwest
Gettysburg NMP	National Military Park	Northeast
Glacier Bay NP & Preserve	National Preserve	Alaska
Glacier NP	National Park	Intermountain
Golden Gate NRA	National Recreation Area	Pacific West
Golden Spike NHS	National Historic Site	Intermountain
Grand Canyon NP	National Park	Intermountain
Grand Teton NP	National Park	Intermountain
Great Basin NP	National Park	Pacific West
Great Smoky Mountains NP	National Park	Southeast
Guilford Courthouse NMP	National Military Park	Southeast
Haleakala NP	National Park	Pacific West
Hamilton Grange NMem	National Memorial	Northeast
Harpers Ferry NHP	National Historical Park	National Capital
Hawaii Volcanoes NP	National Park	Pacific West
Herbert Hoover NHS	National Historic Site	Midwest
Hopewell Culture NHP	National Historical Park	Midwest
Hopewell Furnace NHS	National Historic Site	Northeast
Hubbell Trading Post NHS	National Historic Site	Intermountain
Indiana Dunes NL	National Lakeshore	Midwest
Isle Royale NP	National Park	Midwest
Jewel Cave NM	National Monument	Midwest
John Muir NHS	National Historic Site	Pacific West
Johnstown Flood NMem	National Memorial	Northeast
Joshua Tree NP	National Park	Pacific West
Katmai NP&Pres, Aniakchak NM&Pres, & Alagnak WR	National Preserve	Alaska
Keweenaw NHP	National Historical Park	Midwest
Kings Mountain NMP	National Military Park	Southeast
Knife River Indian Village NHS	National Historic Site	Midwest

Lake Clark NP	National Park	Pacific West
Lake Mead NRA	National Recreation Area	Pacific West
Lassen Volcanic NP	National Park	Pacific West
Lewis & Clark NHP (ex-Fort Clatsop NMem)	National Historical Park	Pacific West
Lincoln Boyhood NMem	National Memorial	Midwest
Lincoln Home NHS	National Historic Site	Midwest
Little Bighorn NM	National Monument	Intermountain
Longfellow NHS	National Historic Site	Northeast
Maggie L Walker NHS	National Historic Site	Northeast
Mammoth Cave NP	National Park	Southeast
Manzanar NHS	National Historic Site	Pacific West
Marsh-Billings-Rockefeller NHP	National Historical Park	Northeast
Mesa Verde NP	National Park	Intermountain
Minute Man NHP	National Historical Park	Northeast
Missouri NRR	National River	Midwest
Mojave NPres	National Preserve	Pacific West
Montezuma Castle NM & Tuzigoot NM	National Monument	Intermountain
Moores Creek NB	National Battlefield	Southeast
Morristown NHP	National Historical Park	Northeast
Mount Rainier NP	National Park	Pacific West
Mount Rushmore NMem	National Memorial	Midwest
Muir Woods NM	National Monument	Pacific West
Natchez Trace NST	National Scenic Trail	Southeast
National Mall & Memorial Parks	OTHER	National Capital
Navajo NM	National Monument	Intermountain
New River Gorge National River	National River	Northeast
Nez Perce NHP	National Historical Park	Pacific West
Ninety Six NHS	National Historic Site	Southeast
Ocmulgee NM	National Monument	Southeast
Olympic NP	National Park	Pacific West
Organ Pipe Cactus NM	National Monument	Intermountain
Pea Ridge NMP	National Military Park	Southeast
Petersburg NB	National Battlefield	Northeast
Petrified Forest NP	National Park	Intermountain
Pictured Rocks NL	National Lakeshore	Midwest
Point Reyes NS	National Seashore	Pacific West
Redwood NP	National Park	Midwest
Rocky Mountain NP (& Cache La Poudre Heritage Ar.)	National Park	Intermountain
Sagamore Hill NHS	National Historic Site	Northeast
Saint Croix NSR & Lower Saint Croix NSR	National Scenic River/Riverway	Midwest
Saint-Gaudens NHS	National Historic Site	Northeast
Salem Maritime NHS	National Historic Site	Northeast
Salinas Pueblo Missions NM	National Monument	Intermountain
San Antonio Missions NHP	National Historical Park	Intermountain
San Juan Island NHP	National Historical Park	Pacific West
Santa Monica Mountains NRA	National Recreation Area	Pacific West

Saratoga NHP	National Historical Park	Northeast
Saugus Iron Works NHS	National Historic Site	Northeast
Scotts Bluff NM	National Monument	Midwest
Sequoia NP & Kings Canyon NP	National Park	Pacific West
Shenandoah NP	National Park	Southeast
Shiloh NMP	National Military Park	Southeast
Sleeping Bear Dunes NL	National Lakeshore	Midwest
Statue of Liberty NM & Ellis Island	National Monument	Northeast
Steamtown NHS	National Historic Site	Northeast
Stones River NB	National Battlefield	Southeast
Theodore Roosevelt Island	OTHER	National Capital
Thomas Stone NHS	National Historic Site	National Capital
Timpanogos Cave NM	National Monument	Intermountain
Tuskegee Airmen NHS	National Historic Site	Southeast
Valley Forge NHP	National Historical Park	Northeast
Vanderbilt Mansion NHS	National Historic Site	Northeast
Vicksburg NMP	National Military Park	Southeast
Virgin Islands Coral Reef NM	National Monument	Southeast
Virgin Islands NP	National Park	Southeast
Weir Farm NHS	National Historic Site	Northeast
Wilson's Creek NB	National Battlefield	Southeast
Wolf Trap NP	National Park	National Capital
Wrangell-Saint Elias NP & Preserve	National Preserve	Alaska
Yellowstone NP	National Park	Intermountain
Yosemite NP	National Park	Pacific West
Zion NP	National Park	Intermountain

Appendix D. Cultural Resource Category Scores and Performance Indicator Ratings

Overall and Category Summary Ratings

Cultural Resource Category	Number of Units Assessed	Range of Overall Scores	Mean Score	Standard Deviation
History	43	28-93	65.4	14.4
Archaeology	53	33-100	62.4	14.0
Cultural Landscapes	52	20-88	57.8	15.6
Historic Structures	49	40-84	64.1	12.0
Museum Collection and Archives	53	21-89	64.2	14.9
Ethnography	41	18-87	53.3	19.9
Overall	54	35-75	61.4	10.0

Benchmarks for Interpretation of Scores

91 to 100 = excellent
81 to 90 = good
61 to 80 = fair
36 to 60 = poor
0 to 35 = critical

Performance Indicator Ratings by Individual Question and Category

Mean (average) values for each performance indicator question (PIQ) across all park units assessed are provided below, by cultural resource assessment category, along with the associated standard deviation values for the means and the PIQ itself. Since each PIQ is rated on a 0-10 scale basis, the values given below should be interpreted on the same scale.

History

1. List Historic Resource Study (HRS) topics and completion dates. Are the HRS's consistent with current professional standards? Specify which resource types are covered in a HRS and which studies are needed. (Zero to ten points for historical context and use of latest scholarship)

5.7 ± 2.4

2. Do cultural resource managers have access to a historian or someone experienced in or trained to do historical research? Is this person on staff or at the regional level? If a historian exists, what percentage of time do they have to work on resource specific research at the park? (Zero to ten points for adequate staffing and expertise)

6.3 ± 2.6

3. Do park managers use available historical research to inform management and planning activities? (Zero to ten points for using history)

8.4 ± 1.7

4. Does the park have an administrative history and when was it completed? In the case of no administrative history, are the park's resource management papers cataloged and accessible through a finding aide, and are there plans to do an administrative history? (Zero to ten points for understanding resource management history)

6.2 ± 2.5

5. What research, not yet done, would enhance or update the history of the park and the park's resources? (Zero to ten points for freshness of message)

6.0 ± 1.6

6. Are cultural resource managers, historians, and interpretation staff working together to create resource-focused messages to promote stewardship? (Zero to ten points for championing the resources)

7.1 ± 2.5

Archaeological Resources

1. Does the resource management plan (RMP) or resource stewardship plan help guide protection activities for archaeological sites? Please cite examples. According to the resource managers, does the park's planning contribute to the protection of the sites? (Zero to ten points to measure plan effectiveness)

5.7 ± 2.1

2. What are the Government Performance and Results Act (GPRA) goals that affect archaeology in the park? Have the goals been met and/or are the goals going to be met, why or why not? (Zero to ten points for meeting, and for the ability to meet, GPRA goals)

7.7 ± 2.3

3. Does funding exist for permanent archaeology staff (park or regional level)? Please explain the park's internal NPS resources, including support/technical center and regional level staff, and describe external partnerships that provide research, planning, or site stewardship. (Zero to ten points for resource management ability)

7.3 ± 1.9

4. From the Archaeological Sites Management Information System (ASMIS), what is the condition breakdown of known archaeological sites within the park? Is ASMIS data accurate and up-to-date (explain)? If ASMIS is outdated, what are the recent condition breakdown figures and sources? (Zero to ten points condition levels)

5.6 ± 2.4

5. Discuss the state of site documentation by providing the number of good, fair, and poor documentation levels from the ASMIS. In addition, according to the resource manager, what is the quality of documentation efforts today and in the past (e.g. were they systematic)? (Zero to ten points for quality of site documentation)

5.6 ± 2.1

6. Has an archaeological overview and assessment been completed? Is it up-to-date? Please explain. (Zero to ten points for completed baseline report)

5.6 ± 3.2

7. How many and what types (e.g. single rock art motif, surface scatter, architectural in nature) of archaeological sites are in the park and what percent of these have been evaluated for the National Register of Historic Places? How many archaeological sites are eligible for the National Register of Historic Places? Please explain. (Zero to ten points for NRHP activity)

5.2 ± 2.5

8. National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA) Section 106 compliance projects take up what percent of a full time archaeologist's time? What are the high profile archaeological compliance studies at the park? Is the park compliant with regard to Section 106 and Section 110 of NHPA? Please explain in light of the Section 106 checklist in the CRM Guideline. (Zero to ten points for a balance between meeting compliance and proactive approaches to archaeological stewardship)

7.4 ± 1.9

9. Is the park unit actively participating in a System-Wide Archaeological Inventory Program (SAIP) or the Vanishing Treasures program? Please explain the pros and cons of the program(s) with respect to resource protection and the status of the resource in the context of the program(s). (Zero to ten points for additional management through NPS programs)

6.3 ± 2.9

10. Are there potentially significant archaeological resources in the park that need evaluation? Where are the gaps in archaeological resource stewardship at the park? Please explain. (Zero to ten points for understanding management needs)

6.6 ± 2.3

11. Does the park make the sites with the highest research value and the most vulnerability or visitation a management priority? Using specific examples, how does prioritization protect the park's most valuable archaeological resources to yield information for interpretation? (Zero to ten points for successful prioritization of resources)

7.1 ± 2.2

12. Are there any plans and/or budget needs not currently in the works that are needed to further the protection of archaeological sites? (Zero to ten points for prioritization of resource needs)

6.9 ± 2.0

13. What type of training focuses on archaeological site protection? How often is this training offered to both seasonal and permanent staff? (Zero to ten points for site protection awareness)

5.8 ± 2.2

14. What are the largest threats to the park's archaeological resources? Are mitigation plans in place? Please explain. (Zero to ten points for threat abatement)

6.1 ± 2.0

15. What tactics and tools does the park use to teach visitors about the importance of site protection, good stewardship, and the consequences of vandalism? According to park staff, why or why not is this awareness program effective? (Zero to ten points for stewardship awareness)

6.4 ± 2.4

16. Overall, do park staff and visitors understand the history and significance behind archaeological sites and artifacts in the park unit? (Zero to ten points for resource significance awareness)

6.7 ± 2.5

17. What archaeological sites or artifacts does the park interpret and in which interpretive theme(s) do these activities fall? What future plans are in place to interpret sites or artifacts? What research, not yet done, would enhance or update interpretative messages that include archaeological artifacts? (Zero to ten points for interpretation)

5.6 ± 2.2

18. Explain how site records are cross-referenced with historical and ethnographical documents that can help identify the cultural meaning of the site itself as an artifact of culture. (Zero to ten points for advanced research)

6.1 ± 3.4

19. Are there collectors acting illegally in the park or park area? If so, has the Archaeological Resources Protection Act of 1979 (ARPA) helped managers investigate and/or prosecute cases? Please explain. (Zero to ten points for enforcing the protection of archaeological sites)

6.8 ± 2.3

20. Is the park meeting the archaeological resource management checklist, located at the end of the archaeology chapter in the CRM Guideline? Please explain. (Zero to ten points for meeting standards from the CRM Guideline.)

7.0 ± 2.0

Cultural Landscapes

1. Does the resource management plan (RMP) or resource stewardship plan provide guidance for the protection of cultural landscapes? Please cite examples. According to the resource managers, does the park's planning contribute to the protection of the sites? (Zero to ten points to measure plan effectiveness)

5.5 ± 2.6

2. What are the Government Performance and Results Act (GPRA) goals that affect cultural landscapes in the park? Have the goals been met and/or are the goals going to be met, why or why not? (Zero to ten points for meeting, and for the ability to meet, GPRA goals)

7.2 ± 3.0

3. Does the park have access to a historical landscape architect, a historical architect, a cultural landscape specialist, or someone with the expertise to help research, manage, and prescribe cultural landscape treatments (please explain)? Is this person on staff or at the regional level? If expertise is located at the regional level, what percentage of the person's time is available to the park? (Zero to ten points for adequate staffing and expertise)

6.1 ± 2.3

4. According to the Cultural Landscapes Inventory (CLI), what are the resource conditions of identified cultural landscapes? Assuming no cultural landscapes have been officially identified, what are the condition levels of landscapes that might qualify? Describe the types of cultural landscapes at the park (e.g. ethnographic etc.). (Zero to ten points for condition of resource and assessment levels)

4.9 ± 2.2

5. To what extent is park or regional staff using the CLI to manage resource data? (Zero to ten points for use of Service-wide database)

6.1 ± 2.7

6. Has evaluation for the National Register of Historic Places (NRHP) taken place for cultural landscapes in the park? Was the evaluation part of the CLI process or not? Please discuss the landscape eligibility status in the park. What cultural landscapes are listed in the NRHP? (Zero to ten points for NRHP activity)

5.9 ± 2.7

7. Tell us about any plans and/or budget changes not currently in the works that would further the protection of cultural landscapes in your park? Are resource managers aware of major resource threats? What mitigation plans are in place or are in need of funding? (Zero to ten points for understanding resource needs)

6.9 ± 1.5

8. What type of training focuses on cultural landscape protection? How often is this training offered to both seasonal and permanent staff? (Zero to ten points for site protection awareness)

4.5 ± 2.3

9. Cultural landscape reports (CLR) are prepared to expand historical record, identify treatment opportunities, and provide direction for management to minimize loss of significant characteristics due to pending development or treatments. List the park's CLR's. Are there recent situations in which a CLR was called for but money, staff, time

or other priorities made it impossible? Please explain. (Zero to ten points for landscape documentation)

5.0 ± 2.8

10. Does staff evaluate and monitor all cultural landscapes according to a historic landscape maintenance plan? Who does the monitoring and what is their training or experiential background? Please explain. Is any photo documentation taking place to measure landscape changes over time? (Zero to ten points for maintenance and monitoring)

5.1 ± 2.3

11. Does a historical landscape architect or other cultural landscape specialist evaluate all work that may affect cultural landscapes within the park? Are ethnographic assessments, in the case of traditionally associated peoples, taking place before ground disturbance? What kind of training do the people have who do most of the evaluation and monitoring of cultural landscape disturbances (e.g. archaeologists)? Please explain. (Zero to ten points for meeting staffing standards)

6.3 ± 2.5

12. Do cultural landscape managers work with other disciplines, especially natural resource managers, and divisions within the Park Service, including ethnography, to ensure the health of the landscapes and that of the resources on the landscape? Please cite examples of this collaboration. (Zero to ten points for integrated management)

7.8 ± 1.9

13. There is a correlation between interpretation and use of a cultural landscape and level of protection. Discuss the interpretation and use patterns of cultural landscapes at the park. What plans are in place to interpret landscapes in the future? What research, not yet done, would enhance or update interpretative messages for cultural landscapes? (Zero to ten points for interpretation and use)

8.4 ± 1.7

14. Do park staff and visitors understand the significance of the cultural landscapes? Please explain cultural landscapes' significance and discuss the tools used to increase staff and visitor understanding of the cultural landscapes. (Zero to ten points for understanding resource significance)

6.3 ± 1.8

15. Is the park meeting the cultural landscape management checklist located at the end of the cultural landscapes chapter in the CRM Guideline? (Zero to ten points for meeting CRM Guideline)

5.6 ± 2.4

Historic Structures

1. Does the resource management plan (RMP) or resource stewardship plan provide guidance for the protection of historic structures? Please cite examples. According to the resource managers, does the park's planning contribute to the protection of the structures? (Zero to ten points to measure plan effectiveness)

5.8 ± 2.7

2. What are the Government Performance and Results Act (GPRA) goals that affect historic structures in the park? Have the goals been met and/or are the goals going to be met, why or why not? (Zero to ten points for meeting, and for the ability to meet, GPRA goals)

8.2 ± 1.7

3. Are all of the park's historic structures captured in the LCS database, and is the data less than five years old? Please explain. (Zero to ten points for Service-wide database activity)

7.5 ± 2.3

4. According to the List of Classified Structures, what are the resource conditions and condition of documentation level breakdowns? (Zero to ten points for condition of resource and documentation)

6.7 ± 1.9

5. What is being done to improve resource conditions or to further assess resource conditions? (Zero to ten points for resource protection)

6.6 ± 1.6

6. What tactics and tools does the park use to teach visitors about the importance of site protection, good stewardship, and the consequences of vandalism? (Zero to ten points for resource protection enforcement tactics)

5.9 ± 2.2

7. Has evaluation for the National Register of Historic Places (NRHP) taken place for all historic structures in the park? Which structures have not been determined eligible for the NHRP, but are managed as historic structures? Please explain the significance breakdown of NRHP listed and determined eligible structures (i.e., how many National Historic Landmarks). (Zero to ten points for NRHP activity)

6.9 ± 1.8

8. Is there an annual park inspection and monitoring program in place and does the program identify preventative maintenance needs? Does the park have access to the necessary staff and money to execute preventative treatments? Is the monitoring information being kept in the LCS? Does the maintenance crew have the information they need to care for resources appropriately? Please explain. (Zero to ten points for maintenance and monitoring)

5.6 ± 2.4

9. Does the park have access to a historical architect to help prepare and review plans and specifications for maintenance, preservation, rehabilitation, restoration, and reconstruction work? Does a historical landscape architect get involved when appropriate? Does the park have access to a historic preservation specialist (master carpenter/craftsman) to oversee preservation work? Please explain. Are these people on staff at the park level or the regional level? If expertise is located at the regional level, how often does the park consult with these people? (Zero to ten points for adequate staffing and expertise)

6.0 ± 2.8

10. How do historic structure managers (cultural resource specialists), work with other disciplines and divisions within the park or at the regional office to ensure the health of the structures and settings? (Zero to ten points for integrated management)

7.8 ± 1.5

11. Are Historic Structure Reports (HSR) completed in preparation for restoration, reconstruction, or extensive rehabilitation work on historic structures? Please describe HSR activity in the park. (Zero to ten points for preservation documentation)

5.2 ± 3.0

12. What type of training is offered to staff on historic structure protection? How often is this training offered to both seasonal and permanent staff? (Zero to ten points for site protection skills)

5.4 ± 2.2

13. Discuss interpretation of prehistoric and historic structures at the park. Specifically when and where do interpreters, rangers, or resource managers use historic structures to communicate broad historical themes, and which themes? Describe plans to interpret historic structures in the future. What research, not yet done, would enhance or update interpretative messages related to historic structures? (Zero to ten points for interpretation)

6.6 ± 1.8

14. Do park staff and park visitors understand the significance of the most frequently visited historic structures? (Zero to Ten points for comprehension of significance)

7.3 ± 1.9

15. Discuss existing threats to the park's historic structures and corresponding mitigation plans. (Zero to ten points for threat mitigation)

5.7 ± 1.9

16. The best way to preserve a historic structure is to bring utility to its existence. What percent of the park's historic structures are living quarters or otherwise used? (Zero to ten points for use)

6.4 ± 2.4

17. Is the park meeting the historic structure management checklist, located at the end of the historic structures chapter in the CRM Guideline? (Zero to ten points for meeting NPS' CRM Guideline)
6.9 ± 1.8

Museum Collection and Archives

1. Does the resource management plan (RMP) or resource stewardship plan provide guidance for the management of collections and archives? Please cite examples. According to the resource managers, does the park's planning contribute to effective management of the collections, archives, and museum exhibits? (Zero to ten points to measure plan effectiveness)
6.0 ± 2.5

2. What are the Government Performance and Results Act (GPRA) goals that affect museum and archival collections in the park? Have the goals been met and/or are the goals going to be met, why or why not? (Zero to ten points for meeting, and for the ability to meet, GPRA goals)
8.3 ± 1.6

3. Is a collection management plan (CMP) or museum management plan (MMP) in place, and when was it last updated? Does the park have a Collections Management Report (CMR), and what does it tell us about the collection? Does the park have an up-to-date Scope of Collection Statement and was it reviewed in the last two years? (Zero to ten points for planning)
6.8 ± 2.1

4. Does the park have access to a curator, museum technician, or archivist? Is this person on staff at the park level or the regional level? If the expertise exists at the regional level, how often does the park rely on this person? (Zero to ten points for adequate staffing and expertise)
6.0 ± 2.8

5. Describe the condition and accessibility (include a finding aide discussion) of the park's archival materials. (Zero to ten points for archival management)
6.0 ± 2.7

6. What is the breakdown of cataloged and backlogged collection items by type? Which items are most at risk and why? (Zero to ten points for resource stewardship)
5.5 ± 2.1

7. Use the Automated National Catalog System (ANCS) to report the number of cataloged items in excellent, good, fair, and poor condition. If the information collected

does not represent the entire collection, please state the park's best estimate for conditions of remaining items. (Zero to ten points condition levels)

5.4 ± 2.7

8. Is the Checklist for Preservation and Protection for Museum Collections up-to-date and turned in every four years? What percentage of the standards is the park meeting and where are the deficiencies? (Zero to ten points museum standards met)

6.9 ± 2.2

9. Are storage facilities adequate to house museum objects, archival documents, and specimens appropriately? Please describe the strengths and needs of storage facilities at the park unit. (Zero to ten points for storage facilities)

6.3 ± 2.2

10. When did the park complete the last annual physical inventory for the entire collection, and was it done according to standard procedure? Does the park have one or more collection condition surveys (CCS) in place to detect problems with the condition of objects? What date was the last collection condition survey completed? Who did the survey(s) and what were the results? (Zero to ten points for threat abatement and monitoring)

6.2 ± 2.8

11. What type of training helps park staff protect museum collections and archival items? How often is this training offered to both seasonal and permanent staff? (Zero to ten points for site protection skills)

5.8 ± 3.1

12. What are the largest threats to the park's museum and archival collections? Are mitigation plans in place? (Zero to ten points for understanding resource needs)

6.6 ± 2.0

13. Is an appropriate representation of museum collections and objects in place through exhibits and are they telling the park's history and significance? Annually, how many in-park research requests occur? How many outside research requests does the park have annually? (See Collection Management Report for research requests)? (Zero to ten points for interpretation)

6.0 ± 2.6

14. What percent of collection items is available to external researchers? Describe accessibility via the Public Search function of ANCS+ and the Web Catalog (see <http://www.museum.nps.gov/>), supervision needs for researchers, and the availability of finding aids for archives. (Zero to ten points for study access)

5.8 ± 2.1

15. Over half of the Park System's collections are archival and almost 66% of these remain backlogged. Please outline the condition of archival items and archival

management needs at the park. (Zero to ten points for archive conditions and management)

5.9 ± 2.7

16. Does archaeological and natural resources fieldwork that generates new objects/specimens provide funding for the resulting objects, specimens, and associated data? If not, please explain the funding process and a possible solution to the problem, if one exists, for collection and archival management. (Zero to ten points for internal processing and storage contributions) NOTE: More funding for the park is our primary aim, not taking money from one group and giving it to another. However, this question may help us identify process improvements that may ultimately enhance collection care.

5.7 ± 3.0

17. Is the park meeting the museum and archival management checklist, located at the end of the museums chapter in the CRM Guideline? (Zero to ten points for meeting CRM Guideline)

7.1 ± 1.8

Ethnography

1. Does the resource management plan (RMP) or resource stewardship plan provide guidance for the ethnography program? Please cite examples. According to the resource managers, does the park's planning contribute to the cultivation of ethnographic relationships and the protection of ethnographic resources? (Zero to ten points to measure plan effectiveness)

5.0 ± 3.2

2. What are the Government Performance and Results Act (GPRA) goals that affect the ethnography program in the park? Have the goals been met and/or are the goals going to be met, why or why not? (Zero to ten points for meeting, and for the ability to meet, GPRA goals)

5.4 ± 3.9

3. Has the park identified the tribes, communities, and other people with traditional associations to its cultural and natural resources? (Zero to ten points for identifying resources)

8.2 ± 2.6

4. On a scale of one to ten, ten being the highest, how would the park staff person responsible for relationships with associated peoples rate his or her relationships with these peoples? In contrast, how would the traditionally associated peoples rate relationships with the park? (Zero to ten points for strong relationships)

7.0 ± 2.3

5. Who at the park is responsible for building long-lasting relationships with traditionally associated peoples? Do they meet with traditionally associated groups on a regular basis despite a lack of issues and crises? Is there a system set up with procurement that enables the relationship manager to bring gifts, provide bagels, coffee, etc. when appropriate? Does the relationship manager feel they have adequate time to cultivate and maintain strong relationships? (Zero to ten points for long-sighted relationships)

5.7 ± 2.7

6. Does the park have access to a cultural anthropologist? Is this person on staff at the park level or the regional level? If the expertise exists at the regional level, to what extent is this person involved? (Zero to ten points for adequate staffing and expertise)

5.7 ± 2.7

7. In what ways has park staff consulted with culturally affiliated Indian tribes, Alaskan natives, native Hawaiians, or lineal descendants on human remains and associated funerary objects, etc.? (Zero to ten points for Native American Graves Protection Repatriation Act (NAGPRA) and other Federal legislation such as Section 106 of the NHPA)

7.7 ± 2.5

8. Is the park fulfilling its potential with regard to cultivating ethnographic relationships and protecting important traditionally associated sites, objects, memories, and cultural information? (Zero to ten points for management activity)

5.3 ± 2.6

9. How often does park or regional NPS staff use the Ethnographic Resource Inventory (ERI)? Who is responsible for entering the data? How has the data facilitated projects that assist in resource protection? (Zero to ten points for use and efficacy of the Service-wide database)

3.9 ± 3.0

10. Interpretation is often not appropriate for ethnographic objects, resources, or places because they are sacred. How does the park handle interpretation (or not) of groups who have traditional associations with the park? What plans are in place to interpret these relationships and or resources when appropriate? (If there are no appropriate interpretation opportunities, skip this question.) (Zero to ten points for interpretation)

5.5 ± 3.1

11. Does the park have an ethnographic overview and assessment in place? If so please explain. (Zero to ten points for baseline research)

4.1 ± 3.6

12. Are there any traditional use studies in place? (Zero to ten points for research)
4.1 ± 3.5

13. How is park staff made aware of NPS ethnographical requirements? How often is this training offered to both seasonal and permanent staff? (Zero to ten points for site protection skills)
4.3 ± 2.7

14. Which of the following studies exist for the park: Ethnographic Landscape Study, Cultural Affiliation and Lineal Descent Studies, Ethno-history, Ethnographic Oral and Life Histories. Use the definitions for each of these studies from the CRM Guideline to help report on the park's use of research to protect ethnographic resources. (Zero to ten points for understanding resource)
4.4 ± 2.9

15. Is the park meeting the ethnography management checklist, located at the end of the ethnography chapter in the CRM Guideline? (Zero to ten points for meeting NPS' CRM Guideline)
4.9 ± 3.0

Appendix E. Ratings Breakdown for Individual Elements of Natural Resource Assessment Across All Parks

Ratings Category I. ECOSYSTEM EXTENT and FUNCTION (EEF)				
Ratings Element	% of Park Units with Rating of:			
	1	2	3	IND
IA. Cover and Habitat Characterization (Ave. %)	26.3	54.6	12.2	13.2
IA1. Habitat loss or degradation	46.7	51.1	2.2	0
IA2. Intra-patch integrity	20	51.1	13.3	15.6
IA3. Cover loss or bare soil increase	20	62.2	13.3	4.4
IA4. Cover density/homogeneity	13.3	57.8	20	6.7
IA5. Canopy and understory architecture change	33.3	56.6	6.7	4.4
IA6. Substrate quality/quantity	24.4	48.9	17.8	8.9
IB. Fragmentation (Ave. %)	26.2	42.7	22.2	8
IB1. Patch connectivity	22.2	46.7	26.7	4.4
IB2. Species Isolation	24.4	26.7	33.3	15.6
IB3. Dispersal barriers	24.4	46.7	17.8	8.9
IB4. Habitat loss	26.7	55.6	15.6	2.2
IB5. Recolonization barriers	33.3	37.8	17.8	8.9
IC. Community Structure & Function (Ave. %)	14.8	35.7	17	35.8
IC1. Complexity and niche diversity	17.8	51.1	14.4	6.7
IC2. Degradation of structure	37.8	40	8.9	13.3
IC3. Patch size/shape changes	13.3	40	8.9	37.8
IC4. Intra-patch microclimate alteration	4.4	26.7	8.9	60
IC5. Inter-patch isolation and edge microclimate	11.1	15.6	11.1	42.2
IC6. Generalist species domination of patches	17.8	31.1	20	31.1
IC7. Age class distribution	13.3	48.9	13.3	24.4
IC8. Primary production	2.2	26.7	13.3	57.8
IC9. Decomposition/Cycling	4.4	22.2	15.6	57.8
IC10. Substrate/hydrologic change	22.2	53.3	6.7	15.6
IC9. Decomposition/Cycling	2.3	0.6	33.2	53.9
IC10. Substrate/hydrologic change	1.8	0.6	15.4	15.4
ID. Disturbance Regimes (Ave. %)	13.5	39.8	18.2	12.9
ID1. Natural disturbance recovery	15.6	26.7	42.2	13.3
ID2. Perturbation resistance	17.8	22.2	20	37.8
ID3. Adjacent lands development effects	33.3	55.6	8.9	2.2
ID4. Fire	20	51.1	17.8	4.4
ID5. Flood	13.3	26.7	33.3	13.3
ID6. Drought	0	28.9	28.9	31.1
ID7. Grazing/Browsing, Fencing	26.7	42.2	8.9	2.2
ID8. Climate change	4.4	62.2	11.1	22.2
ID9. Visitor impact	4.4	82.2	11.1	2.2

Level Benchmarks

3 = No net loss, degradation, negative change or alteration

2 = Limited, isolated, contained or restored loss, degradation, negative change or alteration

1 = Pronounced, widespread, uncontained and/or key species/critical process degradation, negative change or alteration

0= Complete and irreparable loss, absolute degradation, negative change or alteration

In the event that insufficient information or no data or persuasive evidence exist to make a reasonable determination, the level should be marked: IND = Insufficient or No Data. In the event the ratings element is not a feature or is not relevant to the site assessment, the level should be marked: NA= Not Applicable

**Ratings Category II.
SPECIES COMPOSITION & CONDITION (SCC)**

Ratings Element	% of Park Units with Rating of:			
	1	2	3	IND
<i>IIA. Total Species</i> (Ave. %)	26.1	43.9	15	14.5
IIA1. Diversity (age, size class, distribution)	13.3	42.2	37.8	6.7
IIA2. Exotic species	51.1	44.4	2.2	0
IIA3. Invasive species	37.8	55.6	4.4	2.2
IIA4. Genetic variability	2.2	33.3	15.6	48.9
<i>IIB. Native Species</i> (Ave. %)	14.2	44.2	13.9	16.7
IIB1. Composition change	35.6	48.9	8.9	6.7
IIB2. Disease and parasites	13.3	46.7	26.7	13.3
IIB3. Threatened and endangered species	6.7	64.4	20	0
IIB4. Extirpation	15.6	66.7	11.1	2.2
IIB5. Population change	20	62.2	8.9	8.9
IIB6. Dominant species density-dependence	8.9	13.3	6.7	66.7
IIB7. Reintroduction	0	24.4	15.6	8.9
IIB8. Keystone species	13.3	26.7	13.3	26.7
<i>IIC. Trophic & Biotic Interactions</i> (Ave %)	18.9	26.9	19.5	37.3
IIC1. Web dynamics -species loss	8.9	46.7	17.8	24.4
IIC2. Predation rates	2.2	22.2	20	45.6
IIC3. Grazer/Browser effects	31.1	20	17.8	24.4
IIC4. Food chain length	0	17.8	33.3	38.9
IIC5. Competitor change	6.7	34.4	6.7	35.6
IIC6. Predator-prey disruption	4.4	42.2	17.8	35.6
IIC7. Dominance alteration	13.3	36.7	2.2	31.1
IIC8. Species hybridization	0	17.8	20	41.1
IIC9. Allelopathy	0	4.4	22.2	60

**Ratings Category III.
BIOTIC IMPACTS AND STRESSORS (BIS)**

Ratings Element	% of Park Units with Rating of:			
	1	2	3	IND
IIIA. Animals	8.4	45.3	20.5	23.2
IIIA1. Acoustics	4.4	44.4	22.2	24.4
IIIA2. Climate Change	0	46.7	22.2	31.1
IIIA3. Disease	6.7	31.1	44.4	17.8
IIIA4. Environmental Quality	24.4	55.6	11.1	8.9
IIIA5. Exotics Competition	11.1	71.1	13.3	2.2
IIIA6. Land Use History	24.4	37.8	6.7	31.1
IIIA7. Management	4.4	24.4	17.8	48.9
IIIA8. Natural Disaster	0	31.1	22.2	31.1
IIIA9. Food Source	6.7	51.1	15.6	26.7
IIIA10. Poaching	0	60	28.9	6.7
IIIA11. Population Dynamics	2.2	40	13.3	44.4
IIIA12. Isolation/Insulation	17.8	35.6	24.4	20
IIIA13. Visitor Impact	6.7	60	24.4	8.9
IIIB. Plants	15.4	41	20.2	20.5
IIIB1. Climate Change	0	48.9	24.4	26.7
IIIB2. Disease	15.6	35.6	26.7	22.2
IIIB3. Environmental Quality	26.7	37.8	22.2	13.3
IIIB4. Exotics Competition	44.4	51.1	2.2	0
IIIB5. Land Use History	51.1	37.8	6.7	0
IIIB6. Management	4.4	53.3	35.6	2.2
IIIB7. Natural Disaster	8.9	26.7	26.7	18
IIIB8. Nutrient Supply	6.7	31.1	20	42.2
IIIB9. Poaching	0	40	46.7	6.7
IIIB10. Population Dynamics	11.1	35.6	11.1	42.2
IIIB11. Substrate Loss	15.6	51.1	13.3	20
IIIB12. Isolation/Insulation	6.7	13.3	11.1	68.9
IIIB13. Visitor Impact	8.9	71.1	15.6	4.4

**Ratings Category IV.
ENVIRONMENTAL QUALITY FACTORS (EQF)**

Ratings Element	% of Park Units with Rating of:			
	1	2	3	IND
IVA. Air	8.7	28.9	21.3	39.6
IVA1. Acid Deposition (Acid Rain)	8.9	37.7	28.9	20
IVA2. Cl-oxides, Cl-nitrate	4.4	4.4	11.1	75.6
IVA3. HFC's, FHC's, HC's	0	8.9	4.4	84.4
IVA4. Nitrogen Oxides	11.1	48.9	24.4	15.6
IVA5. Sulfur Oxides	11.1	42.2	31.1	15.6
IVA6. Particulates	15.6	40	24.4	20
IVA7. Ozone	13.3	35.6	48.9	2.2
IVA8. VOC's	6.7	13.3	13.3	66.7
IVA9. Visibility	11.1	44.4	22.2	20
IVA10. Hg	4.4	13.3	4.4	75.6
IVB. Waters	7.2	26.6	21.2	38.8
IVB1. Acid Deposition	6.7	22.2	40	28.9
IVB2. Algae	8.9	22.2	15.6	53.3
IVB3. Alkalinity	0	8.9	46.7	40
IVB4. Benthic Index	2.2	20	24.4	53.3
IVB5. Chlorophyll a	0	8.9	13.3	77.8
IVB6. Diatoms	0	6.7	13.3	75.6
IVB7. Discharge/Drainage	17.8	26.7	22.2	31.1
IVB8. Dissolved Gasses	8.9	31.1	28.9	31.1
IVB9. Diversion	2.2	22.2	24.4	22.2
IVB10. Drawdown	2.2	11.1	11.1	26.7
IVB11. Flow	17.8	28.9	24.4	20
IVB12. Metals	15.6	53.3	6.7	24.4
IVB13. Nutrients	20	46.7	15.6	17.8
IVB14. Organic Matter	2.2	24.4	22.2	51.1
IVB15. Organic Wastes	17.8	53.3	8.9	15.6
IVB16. pH	6.7	17	64.4	11.1
IVB17. Plankton	4.4	6.7	11.1	68.9
IVB18. Recharge	4.4	17.8	20	46.7
IVB19. Salinity	4.4	22.2	26.7	33.3
IVB20. Sedimentation	17.8	51.1	13.3	17.8
IVB21. Submerged Macrophytes	2.2	17.8	8.9	68.9
IVB22. Temperature	4.4	31.1	28.9	31.1
IVB23. Turbidity	4.4	35.6	26.7	28.9
IVB24. Xenobiotics	9.9	28.9	6.7	53.3
IVB25. Climate Change	0	51.1	6.7	40
IVC. Soils	4.6	24.1	13.7	54.6
IVC1. Acidity, Alkalinity, pH	2.2	13.3	35.6	48.9
IVC2. Compaction	8.9	44.4	13.3	28.9
IVC3. Erosion	24.4	64.4	6.7	2.2
IVC4. Infiltration/Permeability	0	33.3	33.3	33.3
IVC5. Metals	2.2	22.2	6.7	64.4
IVC6. Nutrients	8.9	28.9	13.3	48.9
IVC7. Organic Matter	4.4	22.2	20	53.3
IVC8. Organic Wastes	4.4	20	4.4	60
IVC9. Salinity & Sodcity	0	2.2	13.3	71.1
IVC10. Soil Fauna & Flora (micro & macro)	0	13.3	2.2	84.4
IVC11. Climate	0	13.3	13.3	73.3
IVC12. Xenobiotics	0	11.1	2.2	86.7