

National Park Service
U.S. Department of the Interior

Great Smoky Mountains National Park
North Carolina and Tennessee



Sochan Gathering for Traditional Purposes Environmental Assessment



November 2018

**SOCHAN GATHERING FOR TRADITIONAL PURPOSES
ENVIRONMENTAL ASSESSMENT**

SUMMARY

The National Park Service is proposing to enter into an agreement with the Eastern Band of the Cherokee Indians to approve the gathering of sochan (*Rudbeckia laciniata*) from Great Smoky Mountains National Park per Title 36 Code of Federal Regulations Part 2.6, *Gathering of Certain Plants or Plant Parts by Federally Recognized Indian Tribes for Traditional Purposes*. This Environmental Assessment (EA) evaluates two alternatives:

- Alternative A – The No Action Alternative. This provides a basis for comparing environmental impacts with the action alternative.
- Alternative B – Sochan Gathering for Traditional Purposes in Limited Areas of Great Smoky Mountains National Park Alternative.

This EA has been prepared in accordance with the National Environmental Policy Act to assess the alternatives and their impacts on the environment. Sochan is the only impact topic analyzed in detail. Other impacts topics were considered but not carried forward for detailed analysis based on the limited anticipated impacts.

PUBLIC COMMENT

If you wish to comment on this EA, you may post comments online at <http://parkplanning.nps.gov/grsm> or mail comments to this address:

Great Smoky Mountains National Park
Environmental Planning and Compliance
107 Park Headquarters Road
Gatlinburg, TN 37738

The EA will be available for public review through December 13, 2018. Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that under provisions of the Freedom of Information Act the entire comment, including your personal identifying information, may be made publicly available at any time. Although you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we would have the legal authority to do so.

**SOCHAN GATHERING FOR TRADITIONAL PURPOSES
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ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
EA	Environmental Assessment
EBCI	Eastern Band of the Cherokee Indians
GRSM	Great Smoky Mountains National Park
NEPA	National Environmental Policy Act
NPS	National Park Service
PEPC	Planning, Environment, and Public Comment

CHAPTER 1: PURPOSE AND NEED

1.1 INTRODUCTION

The National Park Service (NPS) is proposing to enter into an agreement with the Eastern Band of the Cherokee Indians (EBCI) to approve the gathering of sochan (*Rudbeckia laciniata*) from the Great Smoky Mountains National Park (GRSM) per Title 36 Code of Federal Regulation (CFR) Part 2.6, *Gathering of Certain Plants or Plant Parts by Federally Recognized Indian Tribes for Traditional Purposes*. The Cherokee people were the aboriginal inhabitants of a vast geographic landscape covering parts of eight southeastern states, including the area presently encompassed by GRSM (Figure 1-1). The land that is now under the management jurisdiction of GRSM was contained entirely within the aboriginal land base of the Cherokee and constitutes a portion of the area from which all Cherokee originated. President Andrew Jackson signed the Indian Removal Act in 1830, which resulted in the forced removal of all Indian tribes east of the Mississippi River to what is now Oklahoma. The ancestors of the present-day members of the EBCI are the Cherokee individuals who resisted the removal to Oklahoma by the U.S. military in 1838. The few Cherokee who were able to resist removal stayed in their aboriginal homelands, including in the area known as the Qualla Boundary (and alternatively known as Cherokee, North Carolina). The EBCI's trust lands, which make up the Qualla Boundary, adjoin GRSM on the North Carolina side (Figure 1-1). The Qualla Boundary was officially surveyed, and its present boundaries were established in 1876.

GRSM contains a rich abundance of consumable botanicals and fungi that continue to be an important component of Cherokee traditional diet and culture. An integral part of maintaining Cherokee livelihood and identity is to sustain traditional relationships with fish, wildlife, and plants. The Cherokee have a well-defined history of sustainably harvesting edible plants through the application of traditional ecological knowledge (Perry 1974).

The August 2016 NPS rule, *Gathering of Certain Plants or Plant Parts by Federally Recognized Indian Tribes for Traditional Purposes* (36 CFR 2.6), provides a framework for traditional plant gathering in GRSM by the EBCI. This rule indicates that removing or disturbing plants or plant parts is prohibited, except when an established management framework for gathering certain plants or plant parts by federally recognized tribes for traditional purposes has been fully analyzed. The rule explicitly prohibits all plant gathering unless specifically authorized by federal statute, treaty rights, rules or regulations in the CFR, or terms and conditions of an agreement and permit issued under this rule.

As provided under 36 CFR 2.6, the EBCI has requested to enter into an agreement with GRSM to gather portions of the early spring leaves of sochan.

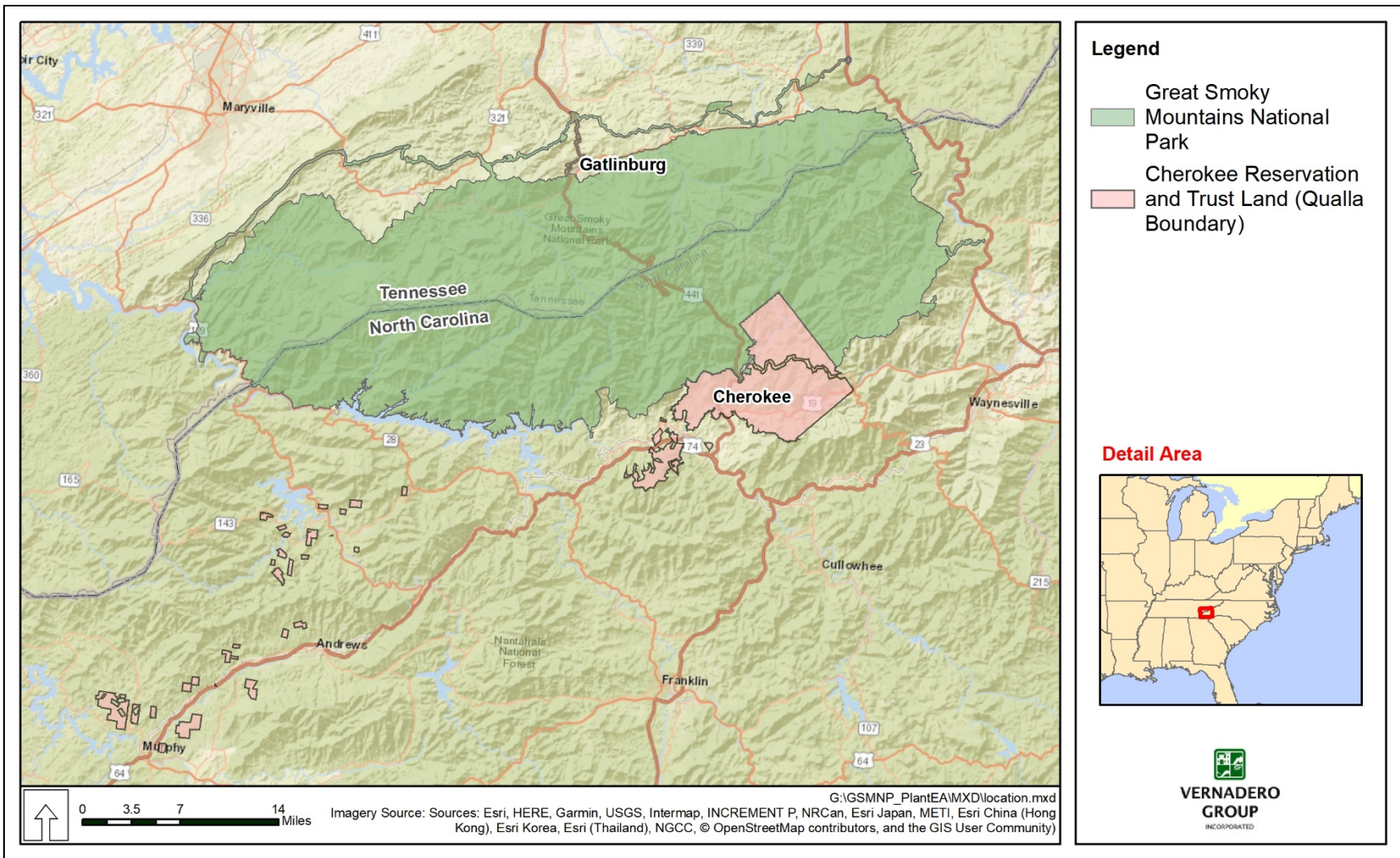


Figure 1-1. Location of Great Smoky Mountains National Park and the Qualla Boundary (Cherokee Reservation and Trust Land)

1.2 PURPOSE AND NEED

The purpose of this proposal is to meet the requirements of 36 CFR 2.6 with both parties entering into a General Agreement and GRSM issuing a special use permit for sochan gathering. The need for the proposal is to provide the EBCI with the opportunity to conduct plant gathering within GRSM for traditional uses such as personal consumption for food, cultural events and celebrations, religious ceremonies, and medicinal purposes. The EBCI is a federally recognized Indian tribe and has made a request to the GRSM Superintendent to gather and remove portions of the spring leaves of sochan within GRSM boundaries and to conduct the traditional gathering of sochan within the framework and limitations of 36 CFR 2.6, *Gathering of Certain Plants or Plant Parts by Federally Recognized Indian Tribes for Traditional Purposes*.

A specific objective of the proposal is to allow EBCI members to gather sochan in the park in an ecologically sustainable manner that does not adversely affect park resources and values. In ecological terms, plant gathering is considered sustainable if it has no long-term deleterious effect on the reproduction or regeneration of populations being gathered in comparison to equivalent nongathered natural populations. Furthermore, sustainable plant gathering should have no discernable adverse effect on other species in the community, or on ecosystem structure and function.

In accordance with 36 CFR 2.6, the EBCI submitted a written request to the GRSM Superintendent that contained the following:

- A description of the Indian tribe's traditional association with the park area
- A description of the traditional purposes to which the traditional gathering activities relate
- A description of the traditional gathering and removal activities that the tribe is interested in conducting, including a list of the plants or plant parts that tribal members wish to gather, and the methods by which those plants or plant parts will be gathered

The Cherokee people, and their presence and use of the area now encompassed by GRSM, predates the park by thousands of years. The early spring leaves of sochan are an important traditional food source for the Cherokee people. The General Agreement between the NPS and the EBCI and implementing special use permit would authorize sochan gathering only by enrolled members of the EBCI. Further, the General Agreement and implementing special use permit would:

- Create a framework for building a knowledge base to support the management of plant gathering activities.
- Expand research to improve the understanding of traditional resource management practices.
- Develop collaborative mechanisms for monitoring and permitting plant gathering and removal activities.
- Promote the development of training programs.
- Expand outreach to EBCI members and to EBCI and GRSM visitors regarding traditional resource use.

1.3 PURPOSE AND SIGNIFICANCE OF THE PARK

The purpose of GRSM is to preserve a vast expanse of the southern Appalachian Mountains ecosystem, including its scenic beauty, extraordinary diversity of natural resources, and rich human history and to provide opportunities for the enjoyment and inspiration of present and future generations. GRSM is the largest mountainous national park east of the Mississippi River (522,419 acres; 2,114 square kilometers) and is one of the most visited national park units. The Great Smoky Mountains exhibit the finest example of the ruggedness, magnitude, height, and scenic grandeur of the southern Appalachian Mountains, including numerous peaks higher than 6,000 feet (1.8 kilometers) in elevation. GRSM is world renowned for its diversity of plant and animal species due to a variety of elevations, landforms, climates, and vegetation communities, which represent forest types like those found from north Georgia to Maine. This makes it an exemplary outdoor laboratory for the study of and education about the ecosystem processes of the southern Appalachian Mountains. Consequently, GRSM is one of the most researched parks in the National Park System. GRSM preserves a significant number of archeological sites, historic structures, ethnobotanical resources, and other vestiges of human interaction with the land (NPS 2016).

1.4 RELATIONSHIP OF THE PROPOSED ACTION TO OTHER PLANS AND POLICIES

The *Compendium of Designations, Closures, Request Requirements and Other Restrictions, Great Smoky Mountains National Park* (NPS 2014) describes the regulatory provisions for the proper management, protection, government use, and public use of GRSM imposed under the discretionary authority of the GRSM Superintendent per 36 CFR. Provisions most relevant to the proposed action include:

- Section 2.1, *Preservation of Natural, Cultural, and Archaeological Resources, (c)(1) and (c)(2)*

The compendium allows for the gathering of specific fruits, berries, nuts, and aboveground fruiting bodies, as well as certain fungi for personal use or consumption. Gathering must be conducted by hand and commercial use is prohibited.

The collection of other plants or plant parts is not allowed under 36 CFR, *Parks, Forests, and Public Property*, or Title 16 U.S. Code, *Conservation*.

CHAPTER 2: ALTERNATIVES

2.1 INTRODUCTION

The NPS considered a full range of alternatives based on information obtained through internal and external scoping and identified one reasonable action alternative to be carried forward for detailed analysis in this Environmental Assessment (EA). Reasonable alternatives are those that meet the purpose and need for action and are technically and economically feasible. An alternative is not considered reasonable if technical, economic, or jurisdictional obstacles make the ability to implement the alternative remote and speculative. Any alternatives considered but dismissed from further analysis are discussed in Section 2.4. The following two alternatives were carried forward for analysis in this EA:

- Alternative A – No Action Alternative. This provides a basis for comparing environmental impacts with the action alternative.
- Alternative B – Sochan Gathering for Traditional Purposes in Limited Areas of GRSM Alternative.

2.2 ALTERNATIVE A – NO ACTION ALTERNATIVE

Alternative A, the No Action Alternative, provides a basis for comparing the environmental impacts with the action alternative. Under the No Action Alternative, enrolled members of the EBCI would not be permitted to gather portions of the early spring leaves of sochan in GRSM.

2.3 ALTERNATIVE B – SOCHAN GATHERING FOR TRADITIONAL PURPOSES IN LIMITED AREAS OF GRSM (PROPOSED ACTION AND PREFERRED ALTERNATIVE)

Under Alternative B, designated enrolled members of the EBCI would be allowed to gather portions of the early spring leaves of sochan. The EBCI would utilize the early spring green as a traditional food source. Gathering of sochan by the EBCI would be done in a sustainable manner using the traditional gathering method of picking a portion of the leaves by hand. All traditional gathering of sochan by the EBCI would follow the specific requirements and limitations described below. These requirements and limitations would be included in the General Agreement and implementing special use permit between the NPS and the EBCI.

2.3.1 Participants

This alternative would allow up to 36 EBCI enrolled members to annually participate in sochan gathering. EBCI participants would be selected through their respective “community clubs” on an annual basis. The number of participants is based on an estimate of interested participants and administrative and sustainability considerations.

The EBCI Natural Resources Department would maintain an active list of permittees; that list would be provided to the GRSM Superintendent at least five business days prior to the beginning of each stated gathering period. Individuals selected to participate in sochan gathering would be issued an EBCI gathering permit. The EBCI gathering permit would need to be signed by the permittee and notarized to

be considered valid. The EBCI Natural Resources Department would retain the right to modify the list during the gathering period and would submit any updated permittee lists to the GRSM Superintendent at least five business days prior to gathering activities by new participants.

Permittees could be accompanied by other EBCI members during gathering. Group sizes would be limited to six people during traditional gathering of sochan to minimize resource damage from trampling. The quantity of sochan gathered would not exceed the limits specified below, regardless of group size.

2.3.2 Sochan Parts Gathered and Quantity Limits

Following traditional practices, permittees would be authorized to gather what is referred to by the Cherokee as the “turkey foot” of the perennial sochan plant. As shown in Photograph 2-1, the turkey foot consists of the upper three leaves of the sochan as the plant begins to grow from the rhizome in the spring. The portions of leaves that would be collected prior to flowering would be no more than 12 inches (30 centimeters) long.



Photograph 2-1. Sochan Early Spring Leaves, Also Referred to as the “Turkey Foot”

The proposed quantity limits are intended to help ensure that sochan gathering is ecologically sustainable, while providing a reasonable amount of sochan for consumption by an individual or small family. A permittee would be allowed to gather a maximum of 0.5 bushel (17.6 liters) per day and a maximum of 1 bushel (35.2 liters) per week of sochan leaves. The annual maximum amount of sochan for each permittee would be 12 bushels (422.4 liters). Permittees would use only official collection bags to collect and transport sochan within GRSM. The official collection bags would be provided by the EBCI Natural Resources Department.

2.3.3 Sochan Gathering Schedule and Locations

Sochan would be gathered annually from 1 March through 31 May. This represents the period when early spring leaves are available at various elevations in the park. Gathering activities would be conducted within authorized sochan gathering zones, which are defined as any area with suitable habitat to support sochan within 328 feet (100 meters) of official GRSM roads, trails, or along the border of GRSM and the Qualla Boundary (Figure 2-1). All gathering activities would remain out of sight of areas such as visitor centers, major roads, parking lots, trailheads, campgrounds, and picnic areas when visitor use is high and would not occur in designated sensitive locations such as research areas.

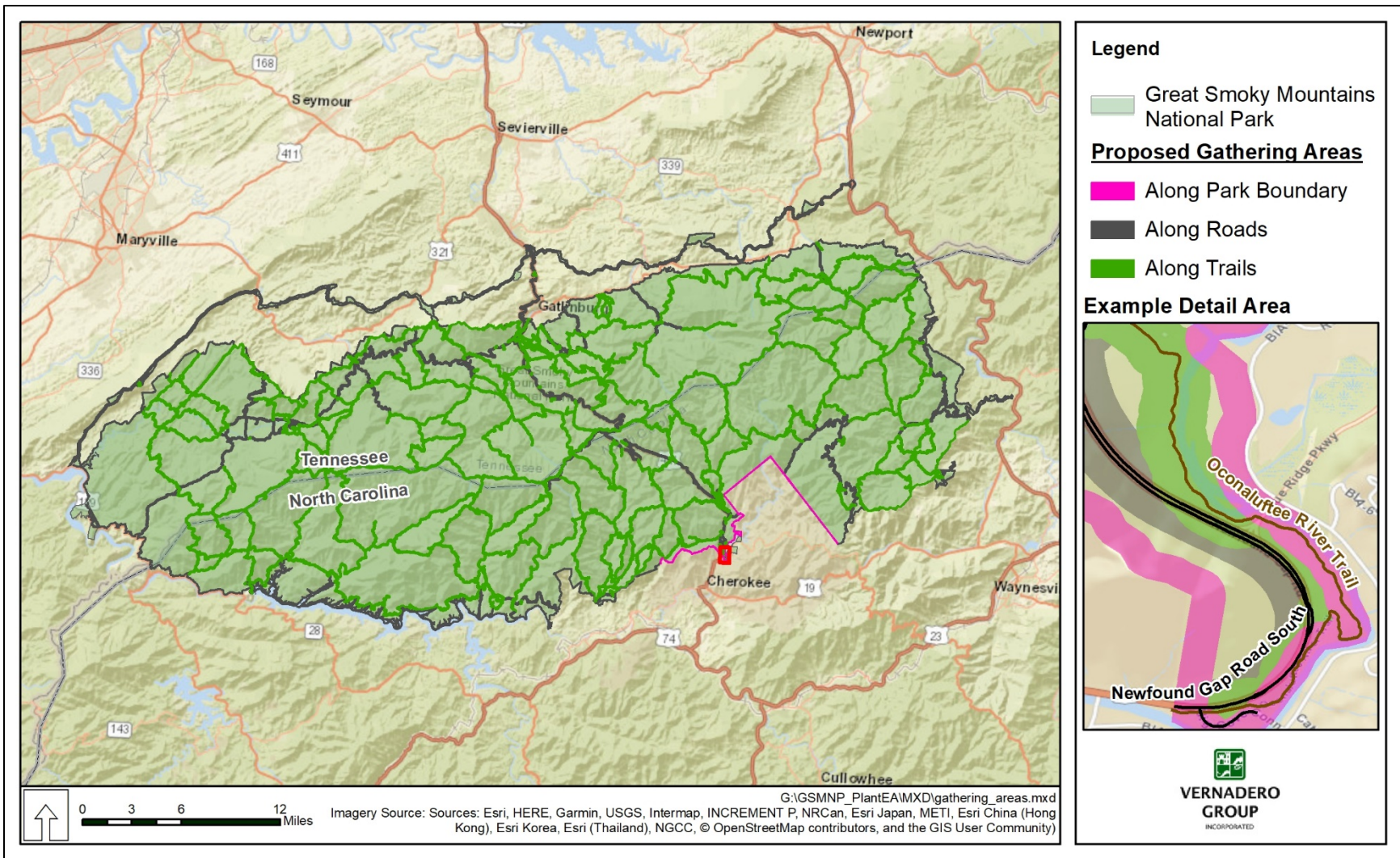


Figure 2-1. Proposed Sochan Gathering Areas

2.3.4 Sochan Gathering Methods

Portions of sochan leaves would be gathered by hand picking. By following traditional gathering techniques, gatherers would take care to avoid disturbing or damaging belowground plant parts.

2.3.5 Sochan Gathering Monitoring

In 36 CFR 2.6, *Gathering of Certain Plants or Plant Parts by Federally Recognized Indian Tribes for Traditional Purposes*, it is required that plant gathering agreements contain protocols for monitoring traditional gathering and removal activities and thresholds above which NPS and tribal management intervention would occur. The NPS and the EBCI would jointly administer a monitoring program for traditional gathering that would consist of three main components: program participation, sochan gathering quantity, and resource impacts. In addition, NPS law enforcement personnel would enforce EBCI gathering permit conditions.

The EBCI Natural Resources Department would administer program participation and sochan gathering quantity monitoring. All individuals selected to participate in sochan gathering at GRSM would complete mandatory training provided by the EBCI. The training would include an overview of the regulations as described in the General Agreement for traditional plant gathering, proper identification of sochan, acceptable sochan gathering methods, background on the EBCI's historic relationship with native plants, and information pertaining to the nutritional value and preparation of sochan for consumption. All permittees would be required to submit a weekly sochan gathering report to the EBCI Natural Resources Department throughout the gathering season. The EBCI Natural Resources Department would forward the reports to GRSM weekly. Report templates would be developed and approved by both parties, and at a minimum they would contain:

- Name of permittee
- Dates of harvest
- Location of sochan gathering
- Number of participants (permittees and guests)
- Number of gathering trips, quantity (volume) gathered per trip, and weekly total

As discussed in Section 3.2.3 (Impacts of Alternative B), the proposed traditional gathering of sochan is considered ecologically sustainable, and it is highly unlikely that proposed gathering would result in plant mortality. Nonetheless, monitoring of sochan habitat conditions would be conducted by the NPS Resource Management and Science Division personnel throughout the growing season (spring and summer) to determine if gathering causes any unanticipated impacts. Monitoring of sochan would follow the Carolina Vegetation Survey protocol (Evans 2016; Lee et al. 2008; Peet et al. 2012) with minor changes as needed. Monitoring plots would be distributed in gathering zones and nongathering zones to assess sochan abundance, potential plant-gathering-related sochan mortality, and incidental impacts of sochan gathering such as trampling.

A 20 percent or greater decline of sochan within a gathering unit, as indicated by mortality of individual rosettes (circular arrangement of leaves originating from the plant's rhizome), would be the threshold

above which NPS and tribal management intervention would occur. A gathering unit is defined as any single area where EBCI permittees would gather sochan in a single gathering event (i.e., one day). A 20 percent decline was selected as an early indicator of potential concern. Corrective action could then be implemented so that impacts would not reach unacceptable levels.

Sochan gathering within the affected gathering unit would be suspended if NPS monitoring indicates a 20 percent or greater decline of sochan within the unit. Area restrictions would be enforced until the sochan recovers to 95 percent of its original abundance in the gathering unit. In addition to suspending gathering in the affected area, NPS and EBCI would investigate possible causes of the unexpected mortality (e.g., improper gathering methods), determine if the problem is localized or widespread, and implement corrective action through education or other appropriate means. If monitoring data indicate that plant trampling is a concern, NPS and EBCI would take actions such as limiting the number of permittees, reducing the size of gathering groups, or curtailing gathering in identified areas. In accordance with 36 CFR 2.6, the GRSM Superintendent may close areas to gathering at any time to protect park resources and values.

NPS law enforcement personnel would enforce EBCI gathering permit conditions in the field. All permittees would be required to use official EBCI-issued collection bags and carry an EBCI gathering permit and an EBCI tribal identification card at all times while gathering sochan in GRSM. NPS law enforcement personnel would maintain updated lists of all permittees and would request and inspect EBCI gathering permit documentation at their discretion.

During the gathering season (March through May), NPS and EBCI staff would hold weekly conference calls to discuss ongoing gathering activities, monitoring results, and any identified concerns. In addition, NPS and EBCI would engage in annual reviews of the status of traditional gathering activities under the General Agreement, at which time revisions to the General Agreement could be proposed based on monitoring results or other information. Revisions to the General Agreement would require an appropriate level of additional National Environmental Policy Act (NEPA) review, approval by the GRSM Superintendent, and modification of the special use permit, as appropriate.

The General Agreement between the NPS and the EBCI would be limited to five years, and a renewal of the General Agreement would be required at the end of the five-year period to allow the continued traditional gathering of sochan on GRSM by the EBCI. The results of sochan gathering monitoring would be used to inform the renewal of the General Agreement.

2.4 ALTERNATIVES CONSIDERED BUT DISMISSED FROM DETAILED ANALYSIS

The following alternative was considered but dismissed from further analysis because it was not considered a reasonable alternative (e.g., did not meet purpose and need or was determined not to be technically or economically feasible).

2.4.1 Sochan Gathering for Traditional Purposes throughout GRSM

An alternative was evaluated to allow traditional plant gathering of sochan by the EBCI at any location within GRSM. Besides allowing sochan gathering parkwide, this alternative would have the same restrictions on the number of permittees and limitations on sochan gathering methods and monitoring, weekly and annual sochan gathering quantities, and sochan gathering timing as described previously for Alternative B, Sochan Gathering for Traditional Purposes in Limited Areas of GRSM.

This alternative was determined to not be reasonable as it is unlikely that permittees would want to gather sochan at distances greater than 328 feet (100 meters) from established roads and trails, especially as much of GRSM consists of steeply sloping terrain with thick vegetation where going off a trail is very physically demanding and potentially dangerous. Additionally, having permittees gathering sochan farther than those distances would make it substantially more challenging for NPS and EBCI personnel to collect monitoring data on sochan gathering, define and delineate gathering units, facilitate communication between permittees and family members, coordinate with law enforcement activities, and conduct any needed search-and-rescue operations. Although this alternative meets the project's purpose and need, it was determined to not be a reasonable alternative and was not carried forward for additional analysis.

No other alternatives meet the project's purpose and need. Therefore, Alternative A, No Action, and Alternative B, Sochan Gathering for Traditional Purposes in Limited Areas of GRSM, were carried forward for further analysis.

2.5 MITIGATION MEASURES

The NPS places a strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. As part of the proposed action and the General Agreement between the NPS and the EBCI that would allow for traditional sochan gathering, Alternative B includes measures to avoid and minimize potential impacts on sochan and other GRSM resources. These include limiting gathering of sochan to EBCI permittees who have completed the appropriate training and plant identification requirements, prohibiting the sale or commercial use of sochan gathered in GRSM, limiting the amount of sochan leaves gathered, monitoring sochan gathering, and implementing corrective actions when needed. Mitigation measures beyond those already included in Alternative B are not warranted.

CHAPTER 3:
AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 APPROACH TO ANALYSIS

3.1.1 Overview

This chapter describes the affected environment and analyzes the potential environmental impacts of Alternative A (No Action) and Alternative B (Sochan Gathering for Traditional Purposes in Limited Areas of GRSM) for the resource topics identified in Section 3.1.2. In accordance with Council on Environmental Quality regulations, direct, indirect, and cumulative impacts are described (40 CFR 1502.16) and are assessed in terms of context and intensity (40 CFR 1508.27).

3.1.2 Issues and Impact Topics

In accordance with NEPA and the *National Park Service NEPA Handbook 2015*, the discussions and analysis in this EA focus on pivotal issues. Issues and impact topics that are not meaningful to the decision were not carried forward for detailed analysis. The issues and impact topics analyzed in this EA are based on internal and external scoping, as well as laws, regulations, Executive Orders, *National Park Service Management Policies 2006*, and NPS knowledge of resources at GRSM.

Resource Topics Retained for Further Analysis

- Biological Resources – Sochan

Resource Topics Dismissed from Further Analysis

Resource topics considered and dismissed from further analysis, and the reasons for dismissing them, are discussed below.

Biological – Nontarget Plants. There is the potential for permitted sochan gatherers to gather plant species that they are not authorized to collect. If this were to occur, unauthorized plant collection could reduce population sizes of nontarget plants. However, measures would be included in the General Agreement between the NPS and the EBCI to minimize the potential for these impacts during sochan gathering. These include educating permittees about plant identification, having GRSM and the EBCI monitor sochan gathering, using traditional plant gathering methods for sochan, and limiting sochan gathering to permit holders. Sochan gathering monitoring and possible corrective actions implemented under the General Agreement would support these requirements. The General Agreement would also specifically exclude collection of special status species, including species listed under the Endangered Species Act. Further, NPS law enforcement would have the authority to enforce gathering permit conditions, just as it enforces the laws and regulations in GRSM for all park users.

Biological – Vegetation Trampling. There is the potential for trampling of vegetation and soil during the gathering of sochan by EBCI permittees and EBCI members accompanying the permittees. This could damage surrounding vegetation and increase soil erosion on slopes. However, the total number of

permittees is small (36), the sochan gathering group sizes at specific gathering units are limited to six persons, and the education of permittees would include avoiding multiple passes over the same area or over the same route during gathering. Further, trampling would be monitored during sochan gathering and modifications made to gathering locations, size of groups participating in sochan gathering, or the number of permittees to eliminate any impacts of trampling on vegetation and soils. Sensitive and wet areas would be avoided during gathering activities.

Biological – Wildlife and/or Wildlife Habitat including Terrestrial and Aquatic Species. It was considered that the gathering of sochan leaves could decrease the available forage for some wildlife species. However, the allowable amount of sochan gathered annually is insignificant in terms of available wildlife forage, including the production of seeds potentially consumed by birds. Also, the removal of leaves from the sochan turkey foot, which is the spring rosette emerging from a perennial rhizome and has ample starch storage for recovery, would not reduce the late-season growth of sochan or development of shoots and leaves, and therefore would have no effect on late-season plant forage biomass. Further, gathering the sochan turkey foot is not expected to adversely affect the plant's ability to flower (McCoy et al. 2018). For that reason, there would be no impact on pollinators such as bees from the proposed action.

Cultural. No impacts on archeological resources, cultural landscapes, museum collections, or prehistoric/historic structures would occur as a result of Alternative B. Alternative B does have the potential for beneficial impacts on ethnographic resources through the perpetuation of traditional practices by the EBCI. The General Agreement between the NPS and the EBCI would perpetuate traditional practices by the EBCI.

Socioeconomics and Environmental Justice. No impacts on land use, energy, community cohesion, or local or regional economics would occur as a result of the implementation of Alternative B. Further, there would be no disproportionate impacts on low-income, minority, or youth populations from Alternative B.

Visitor Use and Experience. No recreational resources would be impacted by sochan gathering under Alternative B. Visitor experience could be affected because some visitors could observe permitted tribal members gathering sochan in GRSM. Visitors who are unaware of the General Agreement allowing permitted EBCI members to gather sochan could become concerned that park rules are not being followed when viewing the traditional plant gathering activities. However, the potential for interactions between permitted gatherers and other GRSM visitors is low based on the small number of EBCI permittees (i.e., 36) who would be involved in sochan gathering and the restriction that prohibits permitted EBCI members from gathering sochan within sight of heavily used areas. Further, potential impacts would be minimized through the education and training required for EBCI permittees and by educating visitors about traditional cultural practices.

Wilderness. Under Alternative B, sochan gathering would be authorized in wilderness areas as well as nonwilderness areas. The General Agreement between the NPS and the EBCI would specify that gathering activities would take place by hand and no motorized vehicles or other mechanized

equipment would be allowed into wilderness areas for sochan gathering. Sochan gathering would be limited to small groups of up to six people. Sochan gathering would follow traditional methods that minimize impacts on the natural, undeveloped, and untrammled qualities of these areas and limit infringement on the solitude and primitive nature of wilderness.

3.1.3 Analyzing Cumulative Impacts

Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions” (40 CFR 1508.7). Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

Cumulative impacts are considered for sochan gathering by combining the impacts of the alternative being analyzed and other past, present, and reasonably foreseeable actions that would also result in beneficial or adverse impacts. The geographic scope for the cumulative impacts analysis is all of GRSM. Projects considered in the cumulative impact analysis are briefly described below.

Past Actions

- Maintenance mowing
- Trail maintenance

Present Actions

- Maintenance mowing
- Trail maintenance

Reasonably Foreseeable Future Actions

- Maintenance mowing
- Trail maintenance
- Other approved traditional plant gathering
- Responses to climate change

3.2 SOCHAN GATHERING

3.2.1 Existing Conditions

Great Smoky Mountains National Park Habitat Conditions

GRSM is renowned worldwide for the diversity of plant and animal species found in the park due to its variety of elevations, landforms, climates, and vegetation communities. Elevations range from low-lying foothills at 850 feet (259 meters) to Clingmans Dome at 6,643 feet (2,025 meters). These elevational differences, along with varied climatic conditions, drive the diverse ecology of the park. GRSM is a refuge for 79 vegetation communities, including approximately 75 percent of the red spruce (*Picea rubens*) – Fraser fir (*Abies fraseri*) forests of the U.S. (Photograph 3-1). Approximately 30 percent of the forests within the park are old growth, making it one of the largest concentrations of old-growth forests east of the Mississippi River. Unique communities include grassy balds, heath balds, beech gap forests, cove hardwood forests, caves and karst, and rare mountain wetlands (NPS 2016).



Photograph 3-1. Red Spruce – Fraser Fir Forest and GRSM Vista

Description of Sochan

Sochan (*Rudbeckia laciniata*) is an herbaceous perennial plant in the Asteraceae family (Photograph 3-2). The genus *Rudbeckia* contains approximately 15 species in North America. Sochan is a rhizomatous plant, meaning that it grows and spreads from a modified stem structure called a rhizome. Each spring, leaves emerge from the underground rhizome and form a rosette that initially sprouts without a flowering stem. These early spring leaves form the turkey foot that is traditionally gathered by the Cherokee. As the season progresses, plants mature and flowers form on the end of long stems that also contain highly lobed or divided leaves. Mature plants are 3 to 10 feet (1 to 3 meters) tall. The flowering period is from July through October. Sochan is a common plant and is found in moist forests, bottomlands, and stream banks from the provinces of New Brunswick, Ontario, and Manitoba in Canada, south to Florida and Texas (Weakley 2015).



Photograph 3-2. Sochan in Flower at GRSM

Sochan is a traditional spring green that is both wild gathered and garden cultivated by the Cherokee. The young green leaves are gathered in the early spring, typically in moister locations, often in shaded areas along mountain streams (McCoy et al. 2018).

Distribution of Sochan in GRSM

Areas across the park with suitable habitat for sochan were modeled based on available sochan data from long-term vegetation monitoring plots in the park as well as other sochan observations contained in GRSM databases. Long-term vegetation monitoring plots are monitored using Carolina Vegetation Survey monitoring methods and data management (Evans 2016; Lee et al. 2008; Peet et al. 2012). The distribution model for sochan indicates that it is widely distributed across GRSM, with numerous occurrences within 328 feet (100 meters) of roads and trails where traditional plant gathering could occur (Figure 3-1). Based on the results of the distribution modeling, an estimated 7,512 acres (3,040 hectares) of GRSM are suitable as sochan habitat (i.e., have habitat conditions with a 50 percent or greater probability of supporting sochan). An estimated 2,260 acres (915 hectares) of suitable sochan habitat are within the gathering areas shown in Figure 2-1.

Sochan frequently grows along roadsides and trails and can be easily seen by park visitors in the most commonly frequented areas. Sochan is also very common locally and regionally outside of GRSM boundaries. In the U.S. and Canada, sochan is only listed as a sensitive species in one state; sochan is listed as threatened by the state of Rhode Island. Sochan is not recommended for protection by any native plant societies. Sochan is easily propagated, has been planted as an ornamental worldwide, and has escaped cultivation in some areas outside of North America (Centre for Agriculture and Biosciences International 2018).

3.2.2 Impacts of Alternative A – No Action

Under the No Action Alternative, traditional gathering of sochan by select permitted members of the EBCI would not be allowed. There would be no removal of spring leaves by permitted EBCI members. There would be no allowable gathering of sochan in GRSM.

Under Alternative A, opportunities for EBCI members to learn about sochan would be reduced, including its proper identification and traditional gathering and preparation methods, because traditional sochan gathering sites in GRSM would not be available to the EBCI. Further, the opportunity for the NPS and general public to learn more about traditional sochan gathering techniques and sochan cooking and preservation methods would be lost, as these activities would not occur in the park where the general public could be educated about the importance of sochan as a traditional food source for the EBCI.

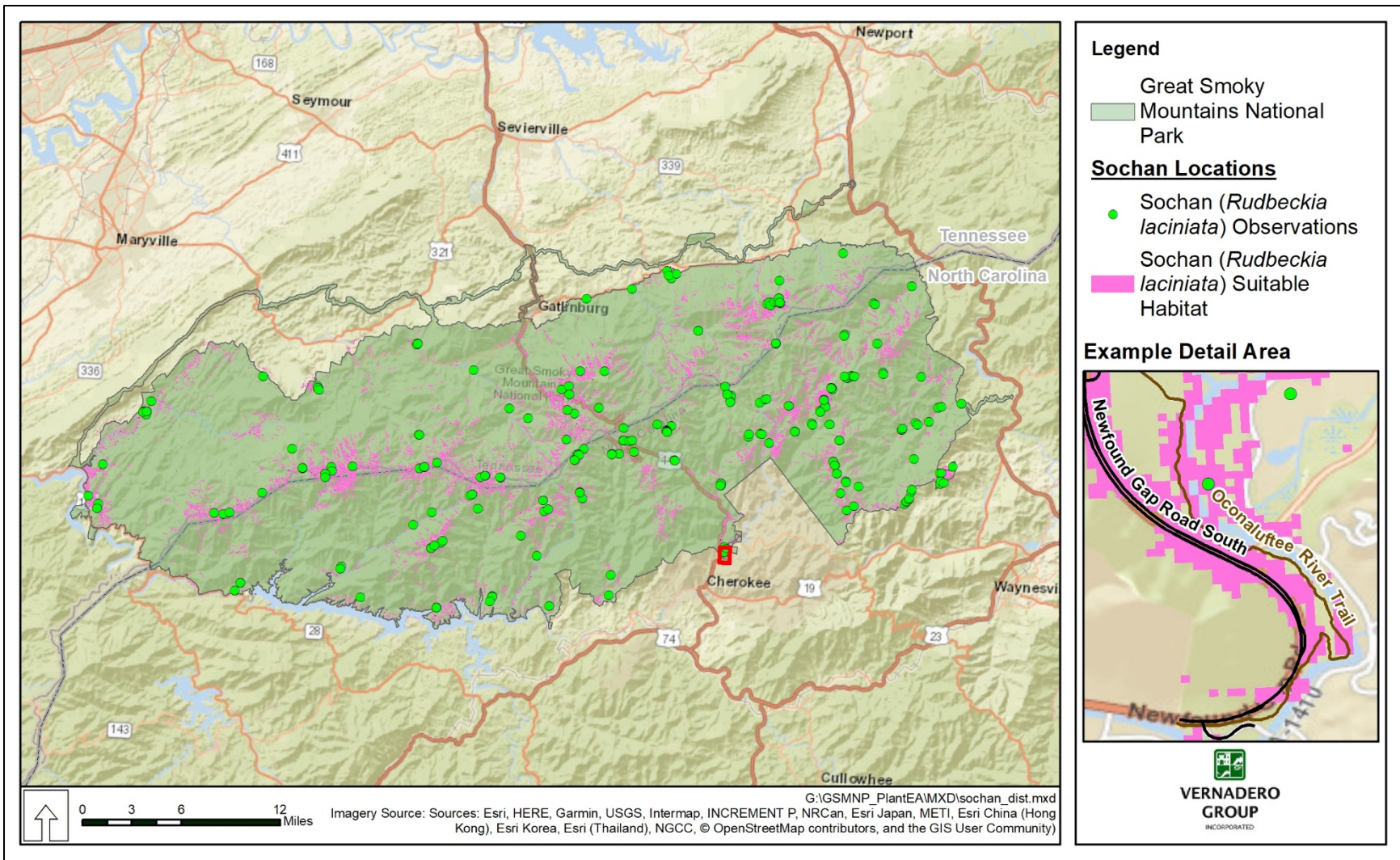


Figure 3-1. Sochan Distribution and Suitable Habitat at Great Smoky Mountains National Park

Cumulative Impacts. Past, present, and reasonably foreseeable future actions identified in Section 3.1.3 that could potentially affect sochan include mowing for maintenance of public areas and facilities, damage to plants during trail maintenance activities, potential trampling of sochan from other future approved plant gathering activities, and responses to climate change. Mowing activities are primarily restricted to roadsides and around developed areas such as buildings, visitor centers, parking areas, and campgrounds. The areas where mowing occurs are already mostly devoid of sochan, as they are maintained turf grass where native perennial plant species such as sochan are rarely allowed to persist. Mowing has caused the loss of some suitable habitat for sochan and the loss of sochan individuals; however, given the large area of the park with suitable habitat to support sochan growth and the limited areas where mowing is allowed, the cumulative impacts on sochan from mowing are minor. Similarly, trail maintenance activities have occurred and would continue to occur on existing trails where sochan is either not present or suitable habitat to support sochan is already disturbed. There would be no contribution to cumulative impacts on sochan from trail maintenance activities.

Trampling of sochan could occur from any off-trail or off-road activities, not just from approved future traditional gathering of other plant species. All future approved and permitted traditional plant gathering would be subject to educational, monitoring, and corrective action requirements and would be curtailed if plant gathering activities were determined to be detrimental to native plant populations. There would be no contribution to cumulative impacts on sochan from future permitted traditional gathering of other plant species.

The effects of climate change on sochan are not known. If the southern Appalachians become wetter and warmer due to climate change, as predicted, then conditions at GRSM and regionally would still likely be suitable for sochan growth, as sochan has a broad distribution relative to average annual temperatures. Further, sochan is most often associated with moist soils, and a wetter environment would likely favor sochan growth. Although no studies have been completed to demonstrate how changes in climate might alter sochan growth and distribution, based on existing information, no adverse cumulative impacts on sochan are anticipated from future climate change.

3.2.3 Impacts of Alternative B – Sochan Gathering for Traditional Purposes in Limited Areas of GRSM

The resource topic of concern is sochan in GRSM, and potential impacts on sochan could occur under Alternative B from gathering a portion of the early spring leaves by EBCI permittees. Potential impacts on sochan in GRSM from Alternative B include plant mortality, plant stress, and altered reproductive capacity.

It is highly unlikely that the permitted gathering of the sochan turkey foot would cause the mortality of sochan plants. The traditional EBCI method for gathering sochan removes only a portion of the early spring leaves from this perennial plant. The leaves are removed by hand so as to not disturb the base of the plant or its rhizome. The removal of a portion of the spring leaves (i.e., turkey foot) is therefore not intended to damage or kill the plant. Instead, the EBCI's traditional method for gathering sochan preserves the plant's base and roots with the intention of creating a long-term sustainable harvest of

spring leaves. This method of plant gathering would be reinforced by the education, monitoring, and management required under the General Agreement.

To test the possible effects of removing the spring leaves of sochan, a study was conducted by McCoy et al. (2018) that involved planting 160 sochan plants originating from a single population along the Little Tennessee River in Swain County, North Carolina, in four raised beds in a research field in Cherokee, North Carolina. The plants were propagated using four different methods (one-year-old plants grown from seed, two-year-old plants grown from seed, rhizome divisions, and entire rhizomes), and all four propagation methods were successful. Plants were then allowed to mature for 4.5 years and divided into study plots where random individual sochan plants were permanently flagged for continuous identification purposes. Gathering of a portion of early spring leaves was then implemented in half the plots, while the other half were used as a control where no gathering occurred. The sochan plants (harvested and controls) were then evaluated six months later to collect survival data for individuals, flower emergence, and seed production; the effect of the gathering of spring leaves on plants compared to the control group was also measured. This study indicated that removal of 50 percent of the early spring leaves did not cause plant mortality within six months (McCoy et al. 2018). Studies of other rhizomatous plants where leaves were damaged or lost from flooding or grazing also indicate that these events do not typically cause plant mortality (Bryant et al. 2015; Striker et al. 2008). Further, periodic removal of small amounts of leaves from plants does not typically cause plant mortality, which is why many cultivated rhizomatous plants are pruned to encourage more vigorous growth, and invasive rhizomatous plants are very difficult to control or remove from areas where they are not wanted (Natural Resources Conservation Service 2018; Wade and Midcap 2015).

There is the potential for the removal of a portion of the early spring leaves of sochan to cause plant stress. Plant stress would be an adverse impact on sochan only if it reduced the plant's growth rate or size or limited its ability to reproduce successfully. The results of the sochan leaf gathering study did indicate that there was an increase in sochan stem size, flowering, and fruiting as a result of the removal of a portion of the early spring leaves (McCoy et al. 2018). These changes could be interpreted as a response to stress, potentially from the removal of a portion of the spring leaves. Studies have indicated that various stressors such as flooding can result in more plant growth, including increased plant height and biomass (Cox et al. 2003; Willis and Hester 2004). Also, many plant species are induced to flower by stress (Wada et al. 2013). In cultivation, pruning of rhizomatous plants is often used by horticulturists to encourage more flowering (Wade and Midcap 2015). However, even if individual sochan plants exhibit stress responses following the removal of a portion of the early spring leaves, because they are rhizomatous perennial plants containing ample stored starches, they would likely recover. Only about 30 percent of the suitable sochan habitat in GRSM would be open to traditional plant gathering. The gathering areas are widely dispersed throughout the park, and little or no gathering is expected to occur in some areas based on the distance of those gathering areas from Cherokee, North Carolina.

The removal of a portion of the early spring leaves of sochan by EBCI permittees would be similar to limited browsing of sochan plants by wildlife. The effects of herbivory on plant abundance, distribution, and growth are highly variable based on the consumer of the plant material, types of vegetation being consumed, and other disturbance factors (Maron and Crone 2006). Where heavy browsing does occur,

particularly by deer in areas where deer are in abundance, herbivory can substantially limit the local abundance and distribution of native plants (Russell et al. 2007). However, plants have complex responses to being consumed and have evolved mechanisms to survive herbivory, and in some cases, herbivory can stimulate plant growth. Yet plant responses to herbivory by consumers is very specific as to species and intensity (Liu et al. 2012). As no information is available regarding the wildlife and insect species that typically consume sochan and how the relationships between those consumers and sochan cause sochan responses, the similarities between natural wildlife browsing and sochan gathering activities are not known.

Increased sochan flowering and fruiting from the removal of early spring leaves could increase the number of sochan seeds distributed in specific gathering units. However, only a small portion of all viable seeds would lead to the growth of new plants (as most seeds are either eaten by wildlife and insects or end up in locations where conditions are not suitable for germination or growth), and only about 30 percent of suitable sochan habitat in GRSM would be open to traditional plant gathering activities. Therefore, it is highly unlikely that, if increased seed production resulted from traditional sochan gathering, the abundance and distribution of sochan would substantially increase in GRSM. Consequently, no impact on sochan reproductive capacity would be expected under Alternative B.

In summary, sochan gathering proposed under Alternative B is expected to be ecologically sustainable with no adverse impacts on sochan in GRSM for the following reasons:

- Sochan is a common plant, widely distributed in GRSM, and across the eastern U.S. and Canada.
- Sochan is a perennial rhizomatous plant with ample starch storage to recover from the removal of a portion of the early spring leaves.
- There is no indication that the gathering of a portion of the spring leaves of sochan harms the plant, causes plant mortality, or decreases reproductive capacity.
- Only about 30 percent of the suitable sochan habitat in GRSM would be open to traditional plant gathering. The gathering areas are widely dispersed throughout the park, and little or no gathering is expected to occur in some areas based on the distance of gathering areas from Cherokee, North Carolina.
- The monitoring program would be a requirement of the sochan gathering General Agreement and special use permit, and GRSM and the EBCI would ensure the success of the monitoring and any corrective management activities.

Under Alternative B, sochan gathering and its associated monitoring program would have a minor beneficial impact on sochan due to a greater understanding of the plant's abundance and distribution in GRSM, its response to the periodic removal of a portion of its early spring leaves, and its growth form and habit. A further beneficial impact would be realized from providing information and educational materials to EBCI permittees and other EBCI members.

Cumulative Impacts. Past, present, and reasonably foreseeable future actions are the same as those discussed under the No Action Alternative (Alternative A) and would have similar cumulative impacts. Because sochan gathering would be highly managed and be restricted to EBCI permittees who are

educated and monitored to properly gather spring basal leaves of sochan using traditional methods, there would be no adverse impact on sochan reproductive capacity, and no contribution to adverse cumulative impacts would occur to sochan from implementation of Alternative B.

CHAPTER 4: CONSULTATION AND COORDINATION

4.1 INTERNAL SCOPING

Internal scoping was conducted by an interdisciplinary team of professionals from the NPS. Team members met to discuss the purpose and need for the project, alternatives, issues, impact topics, and potential environmental impacts. The team also considered public scoping comments, collected background information, and conducted impact analyses.

4.2 PUBLIC SCOPING

A scoping newsletter summarizing the purpose and need for the action was posted on the NPS Planning, Environment, and Public Comment (PEPC) website. A 30-day public scoping period was held from 19 July through 17 August 2018. The scoping period was announced through PEPC and a press release to news media. During the public scoping period, GRSM received 12 communications via PEPC. The comments primarily focused on five issues:

1. The importance of maintaining plant gathering as a traditional cultural practice for the Cherokee people
2. Concerns that authorizing sochan collection could lead to illegal collection of other plants
3. Concerns regarding indiscriminate extractive activities
4. Recommendations that planting and growing sochan on the Qualla Boundary might be a better alternative than allowing collection in GRSM
5. The importance of tribal elder involvement to ensure a sustainable program

All comments received during the scoping period were duly considered and are now part of the decision file for this project.

4.3 NATIONAL HISTORIC PRESERVATION ACT SECTION 106 AND TRIBAL CONSULTATION

The Section 106 consultation process, required by the National Historic Preservation Act, was initiated by GRSM with the Tennessee and North Carolina State Historic Preservation Offices (Appendix A) and three Native American tribes via letters dated 22 August 2018. Those tribes were the Cherokee Nation, United Keetoowah Band of Cherokee Indians in Oklahoma, and Chickasaw Nation.

The NPS has made a preliminary determination that the Preferred Alternative (Alternative B) would have no adverse effect on historic properties listed or eligible for listing on the National Register of Historic Places. A final determination of effect is pending completion of the Section 106 process, including consideration of any public comments on this EA and ongoing consultation with the Tennessee and North Carolina State Historic Preservation Offices and traditionally associated Native American tribes. GRSM will complete the Section 106 consultation process prior to finalizing the NPS decision document for this EA. Furthermore, if additional information on ethnographic resources or traditional uses is provided by the tribes, GRSM will work with concerned parties to avoid any potential impacts associated with the proposed action.

4.4 ENDANGERED SPECIES ACT SECTION 7 CONSULTATION

Scoping letters were sent by GRSM to the North Carolina and Tennessee field offices of the U.S. Fish and Wildlife Service on 22 August 2018. The U.S. Fish and Wildlife Service's response is in Appendix A. In accordance with Section 7 of the Endangered Species Act, the NPS has determined that the Preferred Alternative (Alternative B) would have no effect on any listed species. Therefore, further consultation with U.S. Fish and Wildlife Service is not required.

4.5 LIST OF PREPARERS

The following are the preparers of this EA:

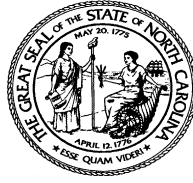
- Mark Collins, GRSM
- Thomas Remaley, GRSM
- Joshua Albritton, GRSM
- Jeff Troutman, GRSM
- Eric Webb, Vernadero Group Inc.
- Patrick McConnell, Vernadero Group Inc.
- Dan Becker, Vernadero Group Inc.
- Maggie Fulton, Vernadero Group Inc.

**CHAPTER 5:
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APPENDIX A. AGENCY CORRESPONDENCE



North Carolina Department of Natural and Cultural Resources
State Historic Preservation Office

Ramona M. Bartos, Administrator

Governor Roy Cooper
Secretary Susi H. Hamilton

Office of Archives and History
Deputy Secretary Kevin Cherry

September 10, 2018

Cassius Cash
Great Smoky Mountains National Park
107 Park Headquarters Road
Gatlinburg, TN 37738

Re: Sochan Gathering for Traditional Purposes by the Eastern Band of Cherokee Indians, Great Smoky Mountains National Park, Multi County, ER 18-2210

Dear Mr. Cash:

Thank you for your letter of August 22, 2018, concerning the above project.

We have conducted a review of the project and are aware of no historic resources which would be affected by the project. Therefore, we have no comment on the project as proposed.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579 or environmental.review@ncdcr.gov. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

A handwritten signature in blue ink that reads "Renee Gledhill-Earley".

for Ramona M. Bartos



TENNESSEE HISTORICAL COMMISSION
STATE HISTORIC PRESERVATION OFFICE
2941 LEBANON PIKE
NASHVILLE, TENNESSEE 37243-0442
OFFICE: (615) 532-1550
www.tnhistoricalcommission.org

September 10, 2018

Superintendent Cassius M. Cash
National Park Service
Great Smoky Mountains National Park
107 Park Headquarters Road
Gatlinburg, TN 37738

RE: NPS / National Park Service, Great Smoky Mountains National Park, Sochan (*Rudbeckia laciniata*)
Gathering for Traditional Purposes by the Eastern Band Cherokee Indians, , Sevier County, TN

Dear Superintendent Cash:

In response to your request, we have reviewed the documents you submitted regarding your proposed undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act. This Act requires federal agencies or applicants for federal assistance to consult with the appropriate State Historic Preservation Office before they carry out their proposed undertakings. The Advisory Council on Historic Preservation has codified procedures for carrying out Section 106 review in 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

After considering the documentation submitted, it is our opinion that there are no National Register of Historic Places listed or eligible properties affected by this undertaking. We have made this determination because either: no National Register listed or eligible Historic Properties exist within the undertaking's area of potential effects; the specific location, size, scope and/or nature of the undertaking and its area of potential effects precluded affects to Historic Properties; the undertaking will not alter any characteristics of an identified eligible or listed Historic Property that qualify the property for listing in the National Register; or it will not alter an eligible Historic Property's location, setting or use. We have no objections to your proceeding with your undertaking.

If your agency proposes any modifications in current project plans or discovers any archaeological remains during the ground disturbance or construction phase, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. If you are applying for federal funds, license or permit, you should submit this letter as evidence of consultation under Section 106 to the appropriate federal agency, which, in turn, should contact us as required by 36 CFR 800. If you represent a federal agency, you should submit a formal determination of eligibility and effect to us for comment. You may direct questions or comments to Justin Heskew at (615) 770-1092.

Sincerely,

E. Patrick McIntyre, Jr.
Executive Director and
State Historic Preservation Officer

EPM/jsh



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Asheville Field Office

160 Zillicoa Street Suite #B

Asheville, North Carolina 28801

September 18, 2018



Mr. Mark Collins
Environmental Protection Specialist
Great Smoky Mountains National Park
107 Park Headquarters Road
Gatlinburg, TN 37738

Dear Mr. Collins:

Subject: Scoping Comments for Sochan Gathering by the Eastern Band of Cherokee Indians,
Great Smoky Mountains National Park, North Carolina

In your letter of August 27, 2018, you requested our comments on the subject project. The following comments are provided in accordance with the provisions of the Migratory Bird Treaty Act, as amended (16 U.S.C. 703); the National Environmental Policy Act (42 U.S.C. § 4321 et seq.); and section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

Your letter states that the Great Smoky Mountains National Park is proposing to enter an agreement with the Eastern Band of Cherokee Indians (EBCI) under 36 CFR Part 2 Final Rule on Gathering of Certain Plants or Plant Parts by Federally Recognized Indian Tribes for Traditional Purposes (Plant Gathering Rule). The Plant Gathering Rule authorizes agreements between the National Park Service and tribes to facilitate continuation of tribal cultural practices in National Parks where those practices traditionally occurred. The proposed agreement would establish a management framework for sustainable gathering of sochan (*Rudbeckia laciniata*) by EBCI members for traditional purposes.

Based on the information provided in your letter and the Scoping Newsletter, we do not anticipate any concerns with any of the alternatives. Thank you for allowing us to comment on these projects. Please contact Mr. Allen Ratzlaff of our staff at 828/258-3939, Ext. 229, if you have any questions. In any future correspondence concerning this project, please reference our Log Number 4-2-18-443.

E-Copy: Andrea Leslie, North Carolina Wildlife Resources Commission,
andrea.leslie@ncwildlife.org



Collins, Mark <mark_collins@nps.gov>

FW: 2018-CPA-0728 NPS - GSMNP Sochan Gathering Scoping Comments

1 message

Dustin Boles <dustin_boles@fws.gov>
To: mark_collins@nps.gov

Tue, Sep 4, 2018 at 2:57 PM

From: Dustin Boles <dustin_boles@fws.gov>
Sent: Tuesday, September 4, 2018 1:55 PM
To: 'mark.collins@nps.gov' <mark.collins@nps.gov>
Cc: Robbie Sykes (robbie_sykes@fws.gov) <robbie_sykes@fws.gov>
Subject: 2018-CPA-0728 NPS - GSMNP Sochan Gathering Scoping Comments

Mr. Collins,

U.S. Fish and Wildlife Service (Service) personnel have reviewed the request for comments regarding the proposal to allow sochan (*Rudbeckia laciniata*) gathering for traditional purposes by the Eastern Band of Cherokee Indians within the Great Smoky Mountain National Park. Your correspondence indicates awareness of federally threatened and endangered species occurring within the boundary of the park and the potential agreement would clearly state that collection of these species is prohibited. The Service would have no objections or concerns regarding this matter provided appropriate measures are taken to ensure impacts to federally protected species would not occur. However, in accordance with the Endangered Species Act of 1973, as amended, if it is determined that the proposed action may affect federally listed species, additional coordination with the Service would be necessary.

Please feel free to contact me if you have any questions.

Thanks,

Dustin W. Boles

Fish and Wildlife Biologist

U.S. Fish and Wildlife Service

[446 Neal Street](#)[Cookeville, Tennessee 38501](#)[Office: 931/525-4984](#)[Cell: 931/261-0117](#)Email: dustin_boles@fws.gov