

 <p align="center"><b>SCIENTIFIC RESEARCH AND COLLECTING PERMIT</b></p> <p align="center">Grants permission in accordance with the attached general and special conditions</p> <p align="center">United States Department of the Interior National Park Service Great Smoky Mountains</p>	Study#: GRSM-01294
	Permit#: GRSM-2019-SCI-1294
	Start Date: Jan 01, 2019
	Expiration Date: Dec 31, 2019
	Coop Agreement#:
Optional Park Code:	

<b>Name of principal investigator:</b>																		
Name: Dr Karen Hughes      Phone: 865-974-6041      Email: khughes@utk.edu																		
<b>Name of institution represented:</b>																		
University of Tennessee																		
<b>Additional investigators or key field assistants:</b>																		
<table border="0"> <tr> <td>Name: Ronald H. Petersen</td> <td>Phone: 865-974-6387</td> <td>Email: repete@utk.edu</td> </tr> <tr> <td>Name: Patrick Matheny</td> <td>Phone: 865-974-8896</td> <td>Email: pmatheny@utk.edu</td> </tr> <tr> <td>Name: Andrew Miller</td> <td>Phone: 217-244-0439</td> <td>Email: amiller@inhs.illinois.edu</td> </tr> <tr> <td>Name: Jessica Budke</td> <td>Phone: 865-974-6204</td> <td>Email: jbudke@utk.edu</td> </tr> <tr> <td>Name: Tom Bruns</td> <td>Phone:</td> <td>Email:</td> </tr> <tr> <td>Name: Rachel Swenie</td> <td>Phone:</td> <td>Email: rswenie@vols.utk.edu</td> </tr> </table>	Name: Ronald H. Petersen	Phone: 865-974-6387	Email: repete@utk.edu	Name: Patrick Matheny	Phone: 865-974-8896	Email: pmatheny@utk.edu	Name: Andrew Miller	Phone: 217-244-0439	Email: amiller@inhs.illinois.edu	Name: Jessica Budke	Phone: 865-974-6204	Email: jbudke@utk.edu	Name: Tom Bruns	Phone:	Email:	Name: Rachel Swenie	Phone:	Email: rswenie@vols.utk.edu
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<b>Study Title:</b>																		
A Survey of Post-Fire Ascomycete and Basidiomycete Fungi in an Eastern Deciduous Forest.																		
<b>Purpose of study:</b>																		
<p>Pls propose to regularly survey at least three areas within the park area that burned in the Chimney Tops II fire for fruiting bodies.</p> <ol style="list-style-type: none"> <li>1. To document pyrophilous ascomycete and basidiomycete fungi at three locations cove-hardwood forest sites within the Great Smoky Mountains National Park over a two-year period. Each site has adjacent unburned areas which will be used for comparison.</li> <li>2. To genotype collections using ITS (fungal barcode), LSU and RPB2 sequences and to use these sequences to determine phylogenetic relationships of pyrophilous fungi.</li> <li>3. To characterize composition and timing of post-fire fungal and bryophyte assemblages in comparison to adjacent unburned plots.</li> </ol> <p>This permit is especially designed to cover a coordinated foray for the Mid-Atlantic branch of the Mycological Association of America, that will be meeting on the Knoxville Campus April 12-14, 2019. Field teams will be lead by Drs. Hughes and/or Matheny, and/or Rachel Swenie. All collections from this foray will return to the University of Tennessee as part of a long-term loan, with the NPS managing any loans back to the participants so they can better work up their materials. A list of all participants and basic contact information should be sent to the park within 5 days of the event. [see additional notes in Collections section].</p>																		
<b>Subject/Discipline:</b>																		
Protista (Including Algae, Fungi)																		
<b>Locations authorized:</b>																		
Areas within and immediately around the burn perimeter of the Chimney Tops 2 Fire, particularly but not exclusively along Baskins Creek Trail, Cove Hardwood Nature Trail, Twin Creeks Trail, Old Sugarlands Spur, and Balsam Point Quiet Walkway.																		
<b>Transportation method to research site(s):</b>																		
Access is by foot off established trails																		
<b>Collection of the following specimens or materials, quantities, and any limitations on collecting:</b>																		
Sequences will be deposited in GenBank. Collection data will reside on the myportal and bryophyte portals. Aligned sequences will be deposited in Dryad. Specimens will be stored in the University of Tennessee herbarium.																		
<p>SPECIMENS DEPOSITED PERMANENTLY IN NON-NPS MUSEUMS REQUIRE SUBMISSION OF A CATALOG WORKSHEET; contact Baird Todd, Park Museum Curator (865/448-2245 or baird_todd@nps.gov), with questions. THE PARK REQUESTS DUPLICATE LABELED REPRESENTATIVE SPECIMENS WHEN AVAILABLE. SPECIMENS SUBMITTED TO OTHER ORGANIZATIONS MUST BEAR LABELING TO THE EFFECT THAT: NO COMMERCIAL USE ALLOWED WITHOUT PRIOR WRITTEN PERMISSION OF U.S. NATIONAL PARK SERVICE. Genetic codes submitted to public databases, such as GenBank, must indicate that they were developed from material collected within Great Smoky Mountains National Park.</p>																		

Perennial woody shelf fungi may not be collected.

PIs have permission to collect soil samples no larger than cores of ¼" diameter and depth of 5". If artifacts are discovered, CEASE ACTIVITY and contact the Research Coordinator or the Cultural Resources Office (828/926-6251; 865/430-0339).

**Name of repository for specimens or sample materials if applicable:**

Repository type: Permanently retained in National Park Service collection, maintained in one or more non-NPS repositories identified in attached Appendix A (complete and submit an Appendix A for each proposed repository) (University of Tennessee)

Objects collected:

Ephemeral fungal fruiting bodies only (mushrooms). This does not damage the fungus which resides as mycellia in substrate.

**NPS General Conditions for Scientific Research and Collecting Permit (available at the RPRS HELP page) apply to this permit. The following specific conditions or restrictions, and any attached conditions, also apply to this permit:**

READ AND ABIDE BY NPS GENERAL CONDITIONS #1-18, A-I (enclosed).

All members of the research team must wear hard hats and be alert to hazard trees in areas that recently burned. Do not visit these areas during periods of high wind or storms.

**ALL RESEARCH MUST BE CONDUCTED WITH MINIMAL IMPACT TO THE PARK'S RESOURCES.** Collect as few specimens as practical. In no case should the continued survival of a population of any native species be jeopardized by your activities.

Park researchers working for other organizations will be required as part of their permit to file travel plans with their HOME work units to facilitate their location and rescue should they not return after work. This applies especially to backcountry travel, defined as travel to park lands that are essentially undeveloped or natural in character and are at least 250 feet from established roadways and developed areas. A general trip plan should also be filed for your stay in the park.

**THE PRINCIPAL INVESTIGATOR AND ALL CO-INVESTIGATORS MUST CARRY A COPY OF THE SIGNED RESEARCH PERMIT WITH THEM AT ALL TIMES WHILE WORKING IN THE PARK AND PRESENT IT TO ANY PARK EMPLOYEE WHO ASKS TO SEE IT.** If you need to add any co-investigators who will work apart from the PI, MAKE COPIES FOR EACH "SATELLITE" GROUP and inform Resource Coordinator of additional names (paul\_super@nps.gov; 828-926-6251). A copy of the permit should be displayed visibly in your parked vehicle when within the park.

**LOCATIONS OF RARE SPECIES MUST BE KEPT CONFIDENTIAL BETWEEN YOURSELF AND PARK STAFF.** Rare species include federally listed (must have USFWS permit as well), federal special concern, state listed and state special concern, and taxa determined by park biologists to be rare park-wide and/or at risk of decline due to human activity. Please inform park staff of inadvertent collection or disturbance of rare species. **DO NOT PUBLISH SPECIFIC LOCATIONS, PUT ON WEBSITES, OR USE IN PRESENTATIONS! WE ARE SERIOUS ABOUT THIS! IF SPECIES ARE FOUND IN UNUSUAL HABITATS OR IN OTHERWISE UNIQUE SITUATIONS, PLEASE CONTACT THE PARK BEFORE RELEASING ANY LOCALITY INFORMATION.**

**Confidentiality Agreement:** I agree to keep confidential any protected information that I may develop or otherwise acquire as part of my work with the National Park Service. I understand that with regard to protected information, I am an agent of the National Park Service and must not release that information. I also understand that by law I may not share protected information with anyone through any means except as specifically authorized by the National Park Service. I understand that protected information concerns the nature and specific location of endangered, threatened, rare, commercially valuable, mineral, paleontological, or cultural patrimony resources such as threatened or endangered species, rare features, archaeological sites, museum collections, caves, fossil sites, gemstones, and sacred ceremonial sites. Lastly, I understand that protected information must not be inadvertently disclosed through any means including websites, maps, scientific articles, presentations and speeches.

Any specimens collected under this permit, any components of any specimens (including but not limited to natural organisms, enzymes or other bioactive molecules, genetic materials, or seeds), and research results derived from collected specimens are to be used for scientific or educational purposes only, and may not be used for commercial or other revenue-generating purposes unless the permittee has entered into a Cooperative Research And Development Agreement (CRADA) or other approved benefit-sharing agreement with the NPS. The sale of collected research specimens or other unauthorized transfers to third parties is prohibited.

**AT ELEVATIONS ABOVE 5,800 feet, IN FRASER-FIR AREAS, DISTURBANCE TO SPRUCE-FIR MOSS SPIDER HABITAT (moss mats on rock outcrops or moss-covered logs adjacent to outcrops) IS NOT ALLOWED.**

**PLEASE BE AWARE OF THE ROCK GNOME LICHEN ON BOULDERS OR EXPOSED BEDROCK IN OR NEAR STREAMS AND AVOID DISTURBANCE (see included sheet with photo).**

PROTECT THE PARK'S CULTURAL RESOURCES BY NOT DISTURBING OLD HOMESITES, CEMETERIES, STRUCTURES, AND OTHER CULTURAL FEATURES. Locate studies well away from these areas.

COLLECT AWAY FROM PARK ROADS, TRAILS, AND OTHER HEAVILY USED AREAS WHENEVER POSSIBLE. THIS PERMIT DOES NOT AUTHORIZE YOU TO PARK OUTSIDE OF DESIGNATED PARKING AREAS...PLEASE PLAN YOUR FIELD SCHEDULE TO ARRIVE AT POPULAR DESTINATIONS EARLY IN THE MORNING TO INSURE ACCESS TO A DESIGNATED PARKING PLACE. Please be respectful of park visitors, employees, and neighbors; a permit to conduct research within the park does not convey or imply permission to conduct research on private land surrounding the park.

PROVIDE THE RESEARCH COORDINATOR WITH THE DATES OF YOUR WORK IN THE PARK AS SOON AS YOU KNOW THEM (it is acceptable to provide a range of dates if you are working both inside and outside the park over a period of time).

This permit is made upon the express condition that the United States, its agents and employees shall be free from all liabilities and claims for damages and/or suits for or by reason of any injury, injuries, or death to any person or persons or property of any kind whatsoever, whether to the person or property of the Permittee, its agents or employees, or third parties, from any cause or causes whatsoever while in or upon said premises or any part thereof during the term of this permit or occasioned by any occupancy or use of said premises or any activity carried on by the Permittee in connection herewith, and the Permittee hereby covenants and agrees to indemnify, defend, save and hold harmless the United States, its agents, and employees from all liabilities, charges, expenses and costs on account of or by reason of any such injuries, deaths, liabilities, claims, suits or losses however occurring or damages growing out of the same. Permittee promises to cooperate with the NPS in the investigation and defense of any claims that may be filed with the NPS arising out of the activities of the cooperator, its agents, and employees.

Your data is extremely valuable to us! We are charged by Congress to inform our management decisions with the best scientific data available. Datasets come in a wide variety of formats, but often with minor modifications your data can easily interface with existing NPS databases. Please contact park Data Manager, Kendra Straub (kendra\_straub@nps.gov, 865-436-1703), as early as possible in your study to discuss mutual access to datasets and compatibility.

Please record coordinates for all collections and observations made within the park and report these at the end of your study or sooner. The park prefers the UTM coordinate system (datum WGS84 or NAD83) but can accept lat/long.

YOU ARE REQUIRED TO SUBMIT AN ONLINE REPORT OF YOUR RESEARCH ACTIVITIES EACH YEAR, and you must mail two copies of your final research report to our office upon completion of your project. Even if you did no work in the park during a calendar year, you must go online and say so. The report can be submitted at the end of your year's work at any time with your research account password that you used to submit your permit. A reminder to submit your Investigator's Annual Report will be distributed electronically to permit holders at the end of the calendar year by Washington. We also request two copies (or one electronic copy) for our library of any publications, dissertations, etc. that use data collected in Great Smoky Mountains National Park.

Breach of any of the terms of this permit or for violation of park regulations will be grounds for revocation of this permit and denial of future permits.

Recommended by park staff(name and title):

Reviewed by Collections Manager:

Yes ☒ No ☐

Approved by park official:

Date Approved:

Title:

Biologist / Research Coordinator

31 January, 2019

I Agree To All Conditions And Restrictions Of this Permit As Specified  
(Not valid unless signed and dated by the principal investigator)

*Karen W. Hughes*  
(Principal investigator's signature)

1/31/2019  
(Date)

THIS PERMIT AND ATTACHED CONDITIONS AND RESTRICTIONS MUST BE CARRIED AT ALL TIMES WHILE CONDUCTING RESEARCH ACTIVITIES IN THE DESIGNATED PARK(S)