



Kent State University
Understanding biodiversity services in urban and analogous natural systems: the case of green roofs

Permission hereby is granted on behalf of the BOARD OF PARK COMMISSIONERS OF THE CLEVELAND METROPOLITAN PARK DISTRICT ("Cleveland Metroparks" or "Permitter") to Kent State University ("Permittee"), authorized staff being designated on Exhibit A attached hereto and made a part hereof (collectively, the "Authorized staff"), at Permittee's sole cost and expense, to conduct within **West Creek and Lakefront** reservation(s) of Cleveland Metroparks (the "Permit Area") research and activities related to **compare insect communities and ecosystem functions on green roofs and thin-soil natural environments**, as more particularly described in Exhibit B and Exhibit C attached hereto and made a part hereof (collectively, the "Activities"), subject to the following terms and conditions:

1. Term of Permit.

This Permit shall take effect on the date of Cleveland Metroparks receipt of proof of insurance, as hereinbelow described, together with this Permit signed by Cleveland Metroparks and Permittee, provided that Permittee, through the Manager of Field Research (collectively, the "Research Manager") or otherwise, shall notify Cleveland Metroparks Ranger Department (440-331-5530) Natural Resource Area Managers, Park Managers, and Nature Center Managers of affected reservations as listed and attached hereto as Exhibit D and made a part hereof (collectively, the "Park Staff") of its intent to commence the Activities at least two (2) working days in advance of commencing the Activities and provided further that this Permit shall not take effect before 5/1/2019 and shall continue through 9/30/2021 unless extended with prior written approval by Cleveland Metroparks; provided, however, that Cleveland Metroparks maintains the right to revoke this Permit at any time for failure to comply with any of the terms and conditions hereof.

2. Conditions of Work.

(a) Plans and Specifications. Prior to commencing any Activity in any instance, Permittee shall submit to Cleveland Metroparks plans and specifications, description of Activities, work order, plan, or proposal (collectively, the "Plan"). No Activity shall begin unless and until the Research Manager, on behalf of Cleveland Metroparks, has given to Permittee written approval of the Plan. Permittee shall conduct the Activities in accordance with the approved Plan unless a modification thereof thereafter is approved in writing by Cleveland Metroparks.

(b) Compliance with Law. The Plan and the Activities must be in compliance with all applicable laws, ordinances, rules, and regulations, including without limitation any and all conditions and requirements imposed by Cleveland Metroparks and other governmental authorities with competent jurisdiction.

(c) Permits, etc. Prior to commencing any Activities, Permittee shall have obtained any and all necessary permits, authorizations, and other consents from any and all governmental authorities with competent jurisdiction.

3. Driveway Requirements. (Intentionally omitted)

4. Use of Permit Area.

(a) Removal of Vegetation. Permittee agrees to remove from the Permit Area only voucher specimens for vegetation that have been identified within the approved Plan. Except as identified in such Plan, no vegetation, shrubs, or trees on Cleveland Metroparks property shall be removed, trimmed, or otherwise damaged unless otherwise approved in writing by the appropriate Natural Resources Area Manager listed in Exhibit D. Except as expressly permitted under this Permit, Permittee shall be liable to Cleveland Metroparks for loss or damage to any vegetation, including without limitation trees, arising out of, or associated with or related to, any of the Activities, the amount of such loss or damage being determined by Cleveland Metroparks.

(b) Removal of Topsoil and/or Subsoil. Any topsoil and/or subsoil removed for the Activities shall be removed from Cleveland Metroparks property promptly by Permittee.

(c) Storage and Parking Conditions. No storage of equipment or materials, shall be permitted on the Permit Area or adjoining Cleveland Metroparks property, unless otherwise approved in writing by the Park Manager, and such equipment, materials, or vehicles, including without limitation trucks, shall be at the risk of Permittee.

(d) Traffic Control. To ensure safety of park users, Permittee shall be required to provide traffic control measures. Such measures, whether they are in the form of flagmen, barricades, lighting, escorts, or any other devices, shall be developed by Permittee and shall follow the standards and guidelines of the Ohio Department of Transportation Manual of Uniform Traffic Control Devices for Streets and Highways, subject to the approval of Cleveland Metroparks Ranger Department. In the event of road closures or other temporary impediments to traffic, Ranger personnel are required and must be arranged in advance with Ranger Headquarters at 440-331-5530, at Permittee's sole cost and expense.

(e) Inspection Rights. To ensure compliance with the terms of this Permit, Cleveland Metroparks shall retain rights of inspection before, during, and after the Activities.

(f) Injury/Emergency Events. In the event of injury that arises in connection with the Activities, or upon the occurrence of an event that would constitute an emergency, Cleveland Metroparks Ranger Department must be notified immediately at 440-331-5530.

(g) Erosion and Sediment Control Practices. To ensure the control of erosion and/or sedimentation that may result from work with respect to the Activities, Permittee shall provide any temporary seeding of disturbed areas, silt fence, storm water drain inlet protection in accordance with recommended practices of the Cuyahoga Soil & Water Conservation District.

5. Use of Park Roadways and Trails.

(a) No Interference. The operation of equipment and vehicles, including

without limitation trucks, on any roadway or trail, and access by persons entering or leaving the Permit Area shall be undertaken in a manner that shall not interfere with, or restrict the use of, or access to, park facilities by park visitors, including without limitation vehicle, bicycle, and pedestrian traffic.

(b) Limited Access. Access for vehicles, including without limitation trucks, to the Permit Area shall be the closest and existing access roads to and from the locations. Access to the specific locations shall be by foot or when necessary to drop off/pick up equipment by existing trails.

(c) Limitations on Vehicles. No vehicle, except rubber-tired, shall be operated on any roadway, trail, or portion of any reservation unless otherwise approved in writing by the Park Manager. Without limiting the generality of the foregoing, materials delivered to the Permit Area shall be delivered in single-axle or double-axle trucks, not exceeding twenty (20) ton gross loads.

(d) Removal of Debris. All roadways and trails must be kept clear of construction debris, spillage, and mud at all times. Should debris, spillage, or mud be carried onto the roadway or trail from the Permit Area, it shall be removed immediately and, in any event, the roadway and trail shall be left clean at the end of each work day.

6. Restoration of Permit Area.

(a) Restoration. Permittee, at Permittee's sole cost and expense, promptly shall restore all surfaces, including without limitation driveways, lawns, grass areas, natural areas, drainage channels, and fences, to the condition existing before being disturbed or, if so requested by Cleveland Metroparks, to the condition recommended by the Research Manager to improve the ecological condition of the disturbed surfaces.

(b) All Purpose Trail Specifications. Without limiting the generality of the foregoing, Permittee, at Permittee's sole cost and expense, promptly shall restore all-purpose trails to the condition existing before being disturbed, including without limitation the following:

- (i) Restoration of compacted sub-base (premium fill may be repaired if existing sub-base cannot be compacted);
- (ii) Installation of not less than 6" item #304 Crushed Limestone (not slag) compacted;
- (iii) Installation of not less than 3" item #448 Asphaltic Concrete consisting of 1½" intermediate and 1½" weaving courses;
- (iv) Asphalt joints of sealed "butt" type at saw-cut edge, no "feather" edges being permitted; and
- (v) Compliance of all materials with requirements of State of Ohio, Department of Transportation, and Construction & Material Specifications.

(c) Re-vegetation and Seed Specifications. Any re-vegetation to replace damaged plant material shall be with native species of equal or greater condition and caliber to the damaged material, as approved in writing by the Director of Natural Resources. The seed

mixture for restoration of grass areas shall be a mixture of 20% Kentucky 31 Fescue, 25% common Kentucky Bluegrass, 20% Manhattan Rye Grass, and 35% Creeping Red Fescue at the rate of eight (8) pounds per one thousand square feet (8:1000). Mulching material shall conform to State Specification 659.06, and installed per State Specification 108.04 and 659.09. Topsoil shall conform to State Specifications 653.01, 653.02, 653.05, 654.03, and 654.04.

7. Indemnification.

Permittee agrees to indemnify, hold harmless, and, if requested, defend Cleveland Metroparks, and any and all of Cleveland Metroparks' officers, employees, and agents from and against any and all liabilities, costs, claims, demands, fines, penalties, proceedings, actions, and causes of action, including without limitation reasonable attorneys' fees, arising out of, or associated with, or related to, any of the activities described herein.

8. Insurance.

Permittee shall maintain and pay for, or cause to be maintained and paid for, (i) commercial general liability insurance, including without limitation contractual liability coverage, products and completed operations coverage, and coverage for collapse, underground exposure, and explosion hazards; and (ii) commercial automobile liability insurance for owned, hired, and non-owned automobiles. Such insurance (A) shall insure against claims for bodily injury (including death) and property damage, with each policy having a combined single limit of not less than \$1,000,000 per occurrence, (B) shall be primary to any insurance maintained by Permittor, and (C) shall name the Board of Park Commissioners of the Cleveland Metropolitan Park District as an additional insured. Certificates of insurance evidencing the aforementioned coverage(s) shall be provided to Permittor prior to commencement of the work. Permittor reserves the right to request a full and complete copy of all insurance policies. Permittee's coverage may not be cancelled or materially changed until at least ten (10) days after written notice to Permittor. The aforementioned insurance coverage(s) shall be placed with an insurance company listed in the latest edition of "Best's Insurance Guide and Key Ratings" with a policy rating of at least A-, X.

9. Termination of Permit.

If at any time the Permit Area ceases to be used by Permittee for the purpose specified herein, the rights hereby granted automatically shall terminate whereupon Permittee, if Cleveland Metroparks so requests, shall remove the Work from the Permit Area in a manner satisfactory to Cleveland Metroparks and, if either Cleveland Metroparks or Permittee so requests, Cleveland Metroparks and Permittee promptly shall execute and record a document that evidences such termination.

10. Entire Agreement.

No modification of this Permit shall be binding upon Cleveland Metroparks or Permittee unless set forth in writing and executed by Cleveland Metroparks and Permittee.

11. Modification.

No modification of this Permit shall be binding upon Cleveland Metroparks or Permittee unless set forth in writing and executed by Cleveland Metroparks and Permittee.

12. Severability.

If any provision of this Permit shall be or become invalid or unenforceable, then this Permit shall be divisible as to such provision, and the remainder of this Permit shall be and remain valid and binding as though such provision were not included herein.

13. Third-Party Rights.

Nothing herein expressed or implied is intended or shall be construed to confer upon any other entity, other than as herein set forth, any rights or remedies under, or by reason of, this Permit.

14. Acceptance of Permit.

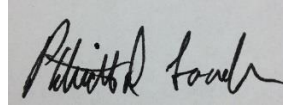
Acceptance of this Permit by Permittee will constitute acceptance of all conditions set forth herein.

Board of Park Commissioners of the
Cleveland Metropolitan Park District
4101 Fulton Parkway
Cleveland, Ohio 44144
(216) 635-3200



4/24/2019

Dr. Christie Bahlai Date
Assistant Professor
Kent State University
PO Box 5190
Kent, Ohio 44242



4/23/2019

Patrick D. Lorch, Ph.D. Date
Manager of Field Research
Cleveland Metroparks
2277 W. Ridgewood Drive
Parma, Ohio 44134
(440) 253-2167 Office
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pdl@clevelandmetroparks.com

[Document1;4/23/2019]

EXHIBIT A

Authorized Staff

Each member of Permittee's authorized staff must carry and exhibit upon request, a copy of the Permit or permit card (issued after signed permit is returned) when conducting any of the activities. The specified Lead Investigator assumes full responsibility for the actions of the authorized staff on this list and for completing and submitting all required reports.

Project Manager: Dr. Christie Bahlai, Assistant Professor, (330) 672-9775, cbahlai@kent.edu

Other authorized staff: Katie Manning, Graduate student kmanni12@kent.edu (906) 241-2994; Julia Perrone, Lab manager jperrone@kent.edu (269) 806-1467

Other individuals authorized by the Lead Investigator may substitute for those listed above if under direct supervision of Authorized Staff set forth above or other person is in possession of permit card or copy of permit card. The Lead Investigator shall be and remain responsible for compliance by Permittee with all terms and conditions of this Permit and for all liabilities and obligations of Permittee arising hereunder.

EXHIBIT B

Conditions of Permit

1. Authorized Activities

- (a) Permit is valid for listed activities in West Creek and Lakefront reservation(s).
- (b) Because of other critical activities in the area of interest and ongoing programs by Cleveland Metroparks staff, notice must be given to the Research Manager by the Project Manager at least 48 prior to each collection event. **Entry to locations may be restricted based on events in these areas.**
- (c) Activities are limited to those outlined in Exhibit C including sampling insects using bee color traps, sticky card traps, and ramp traps.
- (d) Site disturbances must be kept to a minimum.
- (e) NO Threatened or Endangered species are to be collected without consent and permission of Cleveland Metroparks and other appropriate governmental authorities with competent jurisdiction.
- (f) Parking of vehicles is limited to existing parking lots and gravel pull-offs.
- (g) This permit is contingent on approval of bee trap designs by the Manager of Field Research by email that permit holder is reasonably confident will not fly off of the green roofs or puncture holes in the roof membrane. Traps may be left on the roof for two day periods during the study.
- (h) Activities authorized with this permit are limited to normal hours of operation in Cleveland Metroparks (6:00 am to 11:00 pm) and hours outside of these limits with notification given to Cleveland Metroparks Ranger Dispatch (440-331-5530). Special arrangements will need to be made to access the green roof at Edgewater, so more advanced notice may be necessary for this site.
- (i) Permittee agrees to execute a Data Sharing Agreement, if applicable.
- (j) Publications of Results of Studies. No party will unilaterally publish a joint publication without consulting the other party. This restriction does not apply to popular publications of previously published technical matter. Publications pursuant to this permit may be produced independently or in collaboration with others; however, in all cases proper credit will be given to the efforts of those parties' contribution to the publication. In the event no agreement is reached concerning the manner of publication or

interpretation of results, either party may publish data after due notice and submission of the proposed manuscripts to the other. In such instances, the party publishing the data will give due credit to the cooperation but assume full responsibility for any statements on which there is a difference of opinion.

- (k) Rights in Data. The Permittee must grant Cleveland Metroparks a perpetual, non-exclusive, fully-paid up, royalty-free, irrevocable, worldwide, unrestricted license to publish, reproduce and use, and dispose of in any manner and for any purpose without limitation, and to authorize or ratify publication, reproduction or use by others, of all New Intellectual Property first produced or composed under this Permit by the Permittee, its employees, researchers, or any individual specifically employed or assigned to originate and prepare such New Intellectual Property.

2. General Conditions

(a) Standard of Care. Reasonable and prudent care must be taken to minimize disturbance and impact to biological, geological, archaeological, and other park resources and except as expressly permitted under this Permit, Permittee shall be liable to Cleveland Metroparks for loss or damage to park resources arising out of, or associated with or related to, any of the Activities, the amount of such loss or damage being determined by Cleveland Metroparks.

(b) Discretion. Research and collection methods shall not attract undue attention to sensitive park resources, including but not limited to threatened species, endangered species, rare species, archeological sites, caves, fossils, minerals, commercially valuable resources, and sacred ceremonial sites.

(c) Project Reporting. A project report (interim or final) that summarizes educational and research activities and results will be provided to Cleveland Metroparks no later than March 1, 2020, and March 1 of each calendar year thereafter, if applicable. A copy of publications and presentations associated with this project and produced within two (2) years after the expiration or earlier termination of the Permit shall be provided to the Research Manager.

(d) Specimen Reporting. Each specimen (or groups of specimens labeled as a group) that is retained permanently must be clearly labeled as Cleveland Metroparks property and must be accessioned and cataloged in Cleveland Metroparks database. Unless exempted by additional Park District specific stipulations, Permittee will complete the labels and catalog records and will provide accession information. It is Permittee's responsibility to contact the Research Manager for cataloging instructions and specimen labels as well as instructions on repository designation for the specimens.

(e) Specimen Custody. Collected specimens that are not consumed in analysis or discarded after scientific analysis remain Cleveland Metroparks property. Cleveland Metroparks reserves the right to designate the repositories of all specimens removed from the Park District and to approve or restrict reassignment of specimens from one repository to another. Because specimens are Cleveland Metroparks property, specimens shall not be destroyed or discarded without Cleveland Metroparks prior written approval.

(f) Specimen Repository. Cleveland Metroparks designates the Cleveland Museum of Natural History as the repository of record when the project is completed.

(f) Specimen Labeling. Each specimen (or groups of specimens labeled as a group) that is retained permanently must be clearly labeled as Cleveland Metroparks property and must be accessioned and cataloged in Cleveland Metroparks database. Unless exempted by additional Park District-specific stipulations, Permittee will complete the labels and catalog records and will provide accession information. It is Permittee's responsibility to contact the Research Manager for cataloging instructions and specimen labels as well as instructions on repository designation for the specimens.

(g) Specimen Use. Collected specimens may be used for scientific or educational purposes only and shall be dedicated to public benefit and made accessible to the public in accordance with Cleveland Metroparks policies and procedures.

(h) Specimen Transfer. Any specimens collected under this Permit, any components of any specimens (including but not limited to geological, archeological, fossils, 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 or sold to third parties without Cleveland Metroparks prior written approval.

EXHIBIT C

Study Plan

General Information

Project title Understanding biodiversity services in urban and analogous natural systems: the case of green roofs

Project abstract Green roofs provide urban environments and the humans within them with many services, including stormwater management, reduced energy consumption and habitat for organisms. However, due to the physical constraints of many green roof environments, green roof habitats are typically characterized by thin soils experiencing drought, flood, and intense wind and solar radiation. Natural habitats with these characteristics are relatively rare, however, some intact thin soil environments occur in the Great Lakes basin. Our research examines the plant and insect communities arising around these natural and built thin-soil environments, to gain insight into how these habitats contribute service and function to the greater landscape. Insect communities are key contributors to several ecosystem services, including pollination, pest control, and decomposition. Improving our understanding of how insects in these habitats function is important to guide efforts to design structurally-analogous elements intended to deliver services in urban environments. We will sample three functional groups of insects (pollinators, natural enemies and decomposers) in green roofs and natural areas that are similar to green roof structure, while characterizing the plants and other physical attributes of each site. Once identified, we will compare communities between and within built and natural systems of various characteristics, and the functional ecology can be described. Our work will inform design of green roofs to improve biodiversity service delivery in urban environments.

Investigator Information

Project investigator name Christie Bahlai

Title Assistant Professor

Email cbahlai@kent.edu

Primary phone(330) 672-9775

Secondary phone

Fax number

Institutional affiliation of primary investigator Kent State University

Institutional address PO Box 5190

City Kent

State Ohio

Zip 44242

Co-Investigators/cooperators Katie Manning, Graduate student kmanni12@kent.edu (906) 241-2994 Julia Perrone, Lab manager jperrone@kent.edu (269) 806-1467 There will be undergraduate student as well. Names and contact info can be given at a later time.

Qualifications

Qualifications We have all participated in previous ecological research, including insect collection of this kind. Our background in the field is backed up by school work in the areas of ecology, entomology, physics, biology, statistics and so on. Katie's CV can be provided upon request.

Curriculum Vitae

Overview

Statement of problem/issue Our research examines the plant and insect communities arising around these natural and built (green roofs) thin-soil environments, to gain insight into how these habitats contribute service and function to the greater landscape. Insect communities are

key contributors to several ecosystem services, including pollination, pest control, and decomposition. Improving our understanding of how insects in these habitats function is important to guide efforts to design structurally-analogous elements intended to deliver services in urban environments.

Literature review Castleton HF, Stovin V, Beck SBM, Davison JB. 2010. Green roofs; building energy savings and the potential for retrofit. *Energy and Buildings* 42: 1582-1591
Dunnett N & Kingsbury N. 2004. *Planting green roofs and living walls*. Portland, Oregon: Timber Press.
Isaacs R, Tuell J, Fiedler A, Gardiner M, and Landis D. 2009. Maximizing arthropod-mediated ecosystem services in agricultural landscapes: the role of native plants. *Frontiers in Ecology and the Environment* 7 (4): 196-203.
Losey JE and Vaughn M. 2006. The economic value of ecological services provided by insects. *Bioscience* 56: 311-323.
Lundholm J. 2006. Green Roofs and Facades: A Habitat Template Approach. *Urban Habitats* 4 (1): 87-101.

Intended use of results Data and results will be used the dissertation of Katherine Manning. They will also be given to all research collaborators to inform them of the findings.
Objectives, hypotheses, or questions
Objectives 1. Characterization of plant and insect communities at urban (green roof) and natural sites. 2. Comparison of natural sites to urban sites. • Including insects, plants, and physical attributes. 3. Comparison of green roofs with native plants to green roofs with non-native plants. 4. Describing the functional ecology of the insects in these environments. • Including pollination and pest control, and the value of these services. 5. Development of metric for insect decomposition.

Methods

MethodsDescription

Description of study area Green roof at the Watershed Stewardship Center in Parma and the green roof at the Edgewater beachhouse in Cleveland. Natural sites at dusty goldenrod meadow (41°32'44.6"N 81°28'20.0"W 41.545732, -81.472222), bedford barren (41°21'23.8"N 81°34'13.4"W 41.356608, -81.570392), and slate shale hill (41°22'59.2"N 81°42'03.1"W 41.383100, -81.700865). Most trips to the sites will be two people, Katie and an assistant. We will visit two days during the second week of June, July and August, with an additional two days in the end of May for preliminary data collection. The visits each month will be two days apart.

Procedures We will sample three functional groups of insects (pollinators, natural enemies and decomposers) in green roofs and natural areas that are similar to green roof structure, while characterizing the plants and other physical attributes of each site. Bees will be sampled using standard bee bowl arrays (three plastic dishes, painted blue, yellow and white respectively, and suspended on a plastic tray at plant canopy height, and filled with soapy water to capture insects that land in them), at a rate of two to three per site. Flying predators will be sampled using yellow sticky cards, glue traps which are suspended at plant canopy level, at a rate of six to eight per site. Decomposers and other ground dwelling insects will be sampled using ramp traps (pitfall traps designed for thin soil environments to minimize soil or substrate disturbance), at a rate of four per site. Traps will be placed in the field for a 48 hour exposure, once monthly during the summer season, and then collected for transport and processing. We will create species list for all sites, which we will share with Cleveland Metroparks as soon as they become available. Once identified, we will compare communities between and within built and natural systems of various characteristics, and the functional ecology can be described. Insect samples taken will be initially held in the Bahlai Lab at Kent State University during processing and identification; upon completion, voucher specimens will be deposited at the University of Guelph Insect Collection to ensure continuous availability and curation. We will further characterize the plant community at each site using quadrat sampling. To accomplish this, we will identify all plants in two representative 1m² quadrats at each sampled site, and estimate % cover of each species. Plant community assessments will take place once per growing season. Where possible, plants will be identified in-situ by a qualified botanist (J. Gerrath), but where this is impossible, a sample will be taken, pressed and identified in the lab. Plant samples will then be

appropriately mounted and deposited in the Tom S. and Miwako K. Cooperrider Herbarium at Kent State University, where records are digitized and curated.

Collections See procedures.

Analyses See procedures. Statistical tests will be decided upon at a later date, when we have some data to work with.

Schedule This project will run from 2019-2021, with field collection happening during the summer months (June, July, and August. Traps will be out for passive collection for 48 hours during each month.

Literature cited NA - literature listed above

Products

Publications and Reports We hope to publish several papers from this work. All work is going towards Katherine Manning's dissertation project. Annual and final reports will be sent to each research collaborating organization on the date(s) of their request.

Collections Disposition or Destruction See procedures.

Data and Other Materials NA at this time.

Additional Information

Documents Provide copies of any supporting documentation that will facilitate processing of your application, such as the additional information indicated in the previous sections or other required federal and state permits, copies of peer reviews, letters of support and funding commitments, and certifications.

Insurance Form

Chemical safety documents (MSDS or SDS)

Animal Care and Use Committee (IACUC) documents

Other (please specify in Additional comments below)

Other (please specify in Additional comments below)

Additional Comments If there is any other information needed, questions may be directed at kmanni12@kent.edu

Form inserted 4/16/2019 11:35:21 AM

Form updated 4/16/2019 11:35:21 AM

EXHIBIT D

Contains Listing of:

Natural Resources Area Managers

Joshua Philipps (2167809559, jip1@clevelandmetroparks.com): Acacia, Euclid Creek, Wildwood, North Chagrin, South Chagrin

Tim Krynak (216-789-8791, tjk@clevelandmetroparks.com): Huntington, Bradley Woods, Rocky River, Mill Stream Run

Erik Shaffer (440-943-5360, exs@clevelandmetroparks.com): Bedford, Brecksville, Hinckley

Valerie Carter-Stone (216-780-9558 Cell, vcs@clevelandmetroparks.com): Big Creek, Brookside, Garfield Park, Lakefront, Ohio & Erie Canal, Washington, West Creek.

Park Managers

Rob Angiocchi (440-439-5127, 440-887-1964, rja@clevelandmetroparks.com): Bedford

Eric Schneider (216-316-7102, [eas1@clevelandmetroparks.com](mailto: eas1@clevelandmetroparks.com)): Big Creek, Brookside

Chad Heck (440-679-1239, rwh@clevelandmetroparks.com): Bradley Woods, Huntington

Ken Morgan (216-739-6042, klm@clevelandmetroparks.com): Mill Stream Run

Shaun Jones (216-382-5660, sdj@clevelandmetroparks.com): Euclid Creek

Jeremy Skaggs (440-523-1241, jds1@clevelandmetroparks.com): Ohio & Erie Canal, Washington Park, Rivergate

Keith Carney (216-316-5057, kmc@clevelandmetroparks.com): Garfield Park

Jeremy Peppeard (440-526-8300, jap@clevelandmetroparks.com): Brecksville

Amanda Creque (330-278-4544, alc@clevelandmetroparks.com): West Creek

Ken Stray (, kps@clevelandmetroparks.com): Hinckley,

Brad Shawhan (440-943-4896, brs@clevelandmetroparks.com): North Chagrin, Acacia

Rick Ditch (440-331-8287, rdd@clevelandmetroparks.com): Rocky River

Ryan Shalashnow (440-679-1319, rds@clevelandmetroparks.com): South Chagrin

Matt Krems (216-780-1304, mlk@clevelandmetroparks.com): Lakefront

Nature Center Managers

Min Keung (440-473-3370 msk@clevelandmetroparks.com): Brecksville NC, Hinckley

Stacey Allen (216-206-1000, sma@clevelandmetroparks.com): CanalWay NC, Bedford, Ohio & Erie Canal, Garfield Park, Lakefront, Bedford, Rivergate

Behany Majeski (440-473-3370 x7302, bmm@clevelandmetroparks.com): North Chagrin NC, South Chagrin, Acacia

Valerie Fetzer (440-734-6660, vjf@clevelandmetroparks.com): Rocky River NC, Mill Stream Run, Bradley Woods, Huntington

Gayle Albers (440-253-2150, gla@clevelandmetroparks.com): West Creek Watershed Stewardship Center, Big Creek, Brookside

Ranger Department

Cleveland Metroparks Ranger Dispatch (440-331-5530)

Manager of Field Research

Patrick D. Lorch (440-253-2167 Office; 216-310- 7180 Cell; pdl@clevelandmetroparks.com)