

Application for membership in the
Chesapeake Watershed CESU Research Network

From:



Tricia A. Miller, Ph.D.

Executive Director

26 January 2021



700 WASHINGTON STREET, SUITE 2085
CAPE MAY, NJ 08204 • USA

January 26, 2021

Eric Davidson
University of Maryland Center for Environmental Science
Appalachian Laboratory
301 Braddock Road
Frostburg, MD 21532

Dear Dr. Davidson,

I am writing to express the interest of Conservation Science Global (CSG) in becoming a non-federal research partner in the Chesapeake Watershed Cooperative Ecosystem Studies Unit (CESU).

As you will see in our attached application, our mission and our work align well with the CESU. As such, we feel that we will be a productive member of the CESU. We have read the CESU Joint Venture Agreement and, should we be admitted, agree to fulfil our responsibilities as a partner organization. Further, we are fully committed to dedicating the necessary resources to support the Chesapeake Watershed CESU mission.

Finally, for activities conducted through the CESU, I confirm that Conservation Science Global, Inc., is willing to accept the CESU's overhead rate of 17.5% and is willing to accept limitations on cost items to which this rate may apply.

We look forward to continuing our work in the Chesapeake Watershed and to future collaborations with CESU partners. If you have any questions, please contact me by phone at 724-216-3770 or by email at trish.miller@consciglobal.org.

Sincerely,

A handwritten signature in blue ink, appearing to read "Tricia Miller".

Tricia A. Miller, Ph.D.
Executive Director

1. *Confirmation that the institution/organization has read the CESU agreement and agrees to support the CESU mission and goals and fulfill the roles and responsibilities of a nonfederal partner, as described in the CESU agreement Joint Venture Agreement which can be found at the following link: https://chwacesu.org/wp-content/uploads/2015/11/CHWA_2016_agreement.pdf*

Conservation Science Global, Inc. (CSG) Executive Director, Tricia Miller, and CSG Director of Research, Adam Duerr, have read the CESU agreement and agree that CSG will fulfil its roles and responsibilities as a non-federal partner and support the goals and mission of the CESU as described in the Joint Venture Agreement.

2. *Description of the institution/organization, its mission, and the primary focus of collaborative activities to be supported through the CHWA CESU in the context of the CESU mission.*

CSG is a 501(c)3 non-profit established in 2016 and based in West Cape May, NJ. Our mission is to benefit local, regional, and global communities by conducting scientific research that advances conservation and management of natural resources, and by educating the public, scientists, and policy makers about the results and implications of our research. We believe that this mission and the activities of our staff and contractors, who have previously engaged with and will continue to engage with CESU partners, align closely with the goals and mission of the CHWA CESU and the CESU network as a whole. Our employees have a long history, both at CSG and in previous workplaces, of collaborating closely with federal partners in the CHWA and other CESUs, as well as across the country and around the globe.

The focus of our efforts with partners in the CESU has been conducting research, providing technical assistance and education to understand and interpret the ecology of species to inform conservation and management. This has allowed our federal partners to make informed decisions about species and habitat management and to address, manage, and understand conflicts between wildlife and human development. For example, in 2018 we worked with partners at the US Department of Defense (DOD) - Joint Base Langley-Eustis, Langley (JBLE-Langley) and USDA Wildlife Services to reduce shorebird-aircraft strike hazard on the Air Force airfield. Specifically, JBLE-Langley provided us with data collected by USDA Wildlife Services on shorebird use of the airfield and we analyzed those data to understand temporal and weather correlates of use of the airfield. We then provided DOD-JBLE-Langley with a tool to predict use of the airfield by shorebirds. DOD- JBLE-Langley has since used that tool to modify their management strategies to reduce aircraft-shorebird strikes on the base. This is just one of many examples where our research has helped inform management for our federal partners.

In addition to working with DOD on bird-aircraft strike hazard, we are working with or have worked and collaborated with a suite of other federal partners including, USGS, USFWS, BLM, USDA Forest Service, and the NPS. The work encompasses a range of topics from demographics to movement ecology and resource selection, all done with an

applied approach to inform management decisions by those federal partners. We also work with graduate students in a number of settings, especially those focused in our areas of expertise dealing with natural resource management issues. Moreover, we are acting as a pass-through to facilitate independent scientists conducting research. All these efforts are listed in Section 7 and 8 below.

3. *Description or list of the primary programs, departments, or other institutional divisions of relevance to federal land management, environmental, and research agencies that will likely be engaged in CHWA CESU activities. Include website addresses for further information as appropriate.*

All the programs and divisions within CSG are likely to be engaged in CHWA CESU activities. Many of our ongoing programs are documented below.

4. *A list of and brief description of the staff or faculty with expertise in disciplines and subject areas of relevance to federal land management, environmental, and research agencies (do not submit CVs).*

Our research staff includes:

Tricia A. Miller, Ph.D. is a senior research wildlife biologist and executive director at CSG and adjunct faculty at West Virginia University. She is a spatial ecologist with > 20 years of experience studying birds, their habitats, and their conservation. Miller's primary research activities integrate tracking data and spatial analysis to understand movement, connectivity, habitat use, and habitat selection to address conflicts with human development. Miller also has experience modeling species distributions, habitat selection and use using observations and count data. Miller has field experience conducting point counts and other surveys. Moreover, she has extensive experience and is federally permitted to trap and band songbirds, and to trap, band, and telemeter eagles and other raptors.

Adam E. Duerr, Ph.D. is a senior research wildlife biologist and director of research at CSG and adjunct faculty at West Virginia University. He is a quantitative ecologist with >20 years of experience studying avian ecology, eagle movements, and modeling drivers of population dynamics, including causes and consequences of changes in survival, fecundity, and dispersal. He regularly applies such data to address human-wildlife conflicts to assist wildlife managers in reducing damage caused by animals. Duerr has expertise in design and analysis of monitoring programs based on mark-recapture analysis of data from counts, occupancy, and uniquely marked individuals. Such data are collected through a variety of surveys, including transects, targeted searches, and remote tracking. Duerr also has extensive field experience working with colonial waterbirds, shorebirds, and raptors and is federally permitted to trap, tag and telemeter vultures.

Melissa Braham, M.Sc. is a research wildlife and fisheries biologist and director of data science and analytics at CSG. She is an ecologist with >15 years of experience studying

fish and raptor ecology, their habitats, and their movements. Her primary expertise is with the management of large spatial databases (Access, SQL). Recently, her research includes using tracking data to understand distributions, movement, and habitat use of raptors, which is used to inform conservation and management of those species.

Vincent Slabe, Ph.D. is a research wildlife biologist at CSG. He is an expert in raptor toxicology and statistical analysis of toxicological data. Slabe has >10 years of research and field experience studying demography, migration, and toxicology of raptors and is federally permitted to trap, band, and telemeter bald and golden eagles. He is currently directing projects that focus on the implementation of mitigation strategies to reduce eagle mortality from lead poisoning. Additionally, Slabe serves as an associate editor for the Journal of Raptor Research.

5. *For academic institutions, include a description of student demographics and the institution's status as a minority-serving institution (e.g., as defined by the U.S. Department of Education).*

Not applicable.

6. *Description or a list of facilities, equipment, centers, or institutes that would provide support to the research, technical assistance, or educational activities of relevance to federal land management, environmental, and research agencies that will be engaged in CHWA CESU activities.*

CSG conducts predominantly field and computing work and has a fully remote work environment with no permanent office facilities. This also allows us to maintain low overhead rates that are sought by CESU partners. We currently have individual home offices in West Cape May, NJ; New Castle, PA; Chubbuck, ID; and Bozeman, MT. Despite our disparate locations, we have an effective and successful work environment where we engage with one another, using modern team communication platforms, on a daily or near daily basis. Our agency partners in the CESU can expect that our staff will provide communication and research support from any of these locations depending on the person conducting or supporting the research.

7. *Description or a list of past research, technical assistance, and educational services supported through federal financial assistance awards that are of relevance to federal land management, environmental, and research agencies that will be engaged in CHWA CESU activities.*

Past formal agreements to CSG:

- **U.S. Air Force. Joint Base Langley-Eustis.** 2020. Demographic modeling of the local effects to the Bald Eagle population around Joint Base Langley-Eustis from egg oiling. \$5,374
- **National Fish and Wildlife Foundation.** 2017-2020. Joint award to West Virginia University and CSG. Assessment of risk to California Condors from

- wildfire and micro-trash risk in Los Padres National Forest. \$225,361.
- **National Park Service. Denali National Park.** 2019. Understanding movements of subadult eagles from Denali National Park to inform conservation and management of golden eagles in Alaska. \$8,000.
 - **USGS OAG Sacramento.** 2017-2019. Studying the movements of Golden Eagles from Denali National Park to inform conservation and management of the species. \$119,000.
 - **U.S. Air Force Joint Base Langley-Eustis-Langley.** 2018. Understanding waterbird use of airfields at JBLE-Langley to inform management for bird-aircraft strike hazard. \$4,975.

Although CSG is a fairly young organization, our employees have been providing research, technical assistance, and educational services through federal financial assistance awards relevant to agencies engaged in CESU activities. In total, these awards for assistance total ~\$10 million dollars and have spanned >15 calendar years and >45 person-years of work. We have continued these activities under CSG's umbrella. A complete list of these awards received prior to the formation of CSG is available upon request.

8. *Description or a list of current formal agreements and informal relationships with federal agencies that are of relevance to federal land management, environmental, and research agencies that will be engaged in CHWA CESU activities.*

Current formal agreements:

- **U.S. Air Force.** 2020-2023. Monitoring the response of Bald Eagles to hazing and other management strategies to understand aircraft strike hazard at Joint Base Langley-Eustis- Langley, VA. \$139,999
- **Bureau of Land Management.** 2019-2022. Understanding movement of ravens across urban-wildlands gradient to provide information for management and conservation of the Desert Tortoise. \$300,000
- **National Fish and Wildlife Foundation.** 2020-2021. Understanding movement of ravens across urban-wildlands gradient to provide information to BLM for management and conservation of the Desert Tortoise. \$250,000.
- **National Renewable Energy Lab (DOE).** 2020-2021. Using Golden Eagle telemetry data to model risk of negative interactions between wind energy and eagles. \$93,145.
- **National Fish and Wildlife Foundation.** 2020-2022. Using a non-lead ammunition distribution program to provide information for offsetting Golden Eagle mortalities at wind energy facilities in Wyoming.
- **US Fish and Wildlife Service.** 2019-2021. Monitoring Steppe Eagle movements and surveying markets in the Middle East to understand trafficking of birds in the region. \$185,570
- **Bureau of Land Management.** 2019-2021. Estimating population-wide consequences of bird from renewable energy facilities to inform management by

BLM. \$164,956.

- **National Park Service.** 2019-2021. Understanding use of National Parks by Golden Eagles from Alaska. \$64,000.
- **National Fish & Wildlife Foundation.** 2018-2022. Assessing risk to Golden Eagles from wind turbine development: an adaptive management approach to building, validating, refining, and implementing risk models. \$222,499.63.
- **Bureau of Land Management.** 2021-2025. The pollinating community associated with rare plants on BLM lands in New Mexico. \$249,959.
- **National Fish and Wildlife Foundation.** 2020-2021. Pollinators for rare plants in New Mexico. \$90,000.
- **Bureau of Land Management.** 2020-2021. Current Mohave Ground Squirrel Distribution on BLM Lands in the California Desert. \$292,000.

Informal relationships:

- CSG runs and manages a SQL Server database of 10s of millions of GPS telemetry data collected from seven species of birds and distributes those data to collaborators at USGS, NPS, USFWS, and other organizations, individuals, and agencies.
- CSG has strong and productive informal relationships with scientists at USGS.
 - We collaborate on a number of projects with USGS scientists at the Forest and Rangeland Ecosystem Science Center. These collaborations include many of the projects listed above as well as other projects studying movements of California condors, trumpeter swans, bald and golden eagles.
 - We collaborate with USGS scientists at Geosciences and Environmental Change Science Center on studies of effects of renewable energy development to wildlife populations.
- CSG has a number of informal relationships with USFWS.
 - We collaborate with staff at USFWS Region 3 (Interior Regions 3 and 4) to understand movements bald eagles to inform conservation and management of the species in the face of wind energy development in the Upper Midwest; this relationship involved serving on the graduate committee of a MS student who was in the pathways program for USFWS.
 - We collaborate biologists with the USFWS Regions 2 and 6 (Interior Regions 5,6 and 7) to understand movements of bald eagles in Kansas and Oklahoma, and golden eagles in Wyoming, in the context of development of wind energy in these areas.
 - We collaborate with biologists in USFWS R8 (Interior R8 and 10) in the California Condor Recovery Program and to understand movements and demography of golden eagles within the state. In this case, work is focused on threats from both renewable energy (wind and solar) as well as lead poisoning for all birds.

- We collaborate with biologists in USFWS R7 (Interior R11) to understand movements of bald eagles in Alaska and to manage telemetry data collected on these birds.
 - We collaborate with biologists with the USFWS National Raptor Program to understand the effects of lead poisoning on North American bald and golden eagle populations. In this case, we are utilizing our nationwide dataset to better inform population modeling efforts.
 - CSG has informal relationships with USDA.
 - For the past 8-years, researchers at CSG have worked with managers at US Forest Service Shoal Creek Ranger District, Heflin, AL to understand resource selection and distribution of golden eagles in Alabama as well as to understand the effects of controlled burns on Forest Service land on golden eagle habitat selection.
 - CSG researchers regularly work with USDA Wildlife Services in Virginia to address management of avian species. We collaborate to address bald eagle and shorebird use of airfields.
 - CSG researchers regularly work with USDA Wildlife Services in West Virginia to address management of vultures in proximity to airfields.
 - CSG has both a formal and informal relationship with biologists at the US National Park Service to manage telemetry data and analyze and interpret movements of eagles in Alaska, Canada, and the lower 48 states.
9. *Confirmation of the institution's/organization's willingness to accept a limited overhead rate of 17.5% and cost items to which the rate is applicable for activities conducted through the CESU, including research, technical assistance, and educational services (this overhead rate applies to the entire institution/organization for CHWA CESU activities). **This confirmation must be on organizational letterhead and signed by the appropriate authority.***

CSG accepts the 17.5% overhead rate and any limitations on cost items to which this rate applies. A formal letter of acceptance is included with this application.

10. *Designation of a technical representative AND administrative representative (with full contact information – name, title, full address, phone, fax, email) to serve on the CHWA CESU steering committee.*

Adam Duerr, Ph.D., Director of Research, will be the technical representative for CSG and serve on the CHWA CESU steering committee. Tricia Miller, Ph.D., Executive Director will serve as the administrative representative.

Technical Contact:

Adam Duerr
Conservation Science Global, Inc.
700 Washington Street, Ste. 2085
Cape May, NJ 08204
adam.duerr@consciglobal.org
757-903-5461

Administrative Contact:

Tricia Miller, Ph.D.
Executive Director Conservation
Science Global, Inc.
700 Washington Street, Ste. 2085
Cape May, NJ 08204
trish.miller@consciglobal.org
724-216-3770

- 11. Participation in the CESU annual/semi-annual partner meetings, and facilitation of internal and external communication, promotion, and response to CESU correspondence and administrative actions (e.g., announcements, new member applications, processing agreements/amendments, five-year reviews).*

CSG agrees to participate in all CESU meetings, and to facilitate internal and external communication, promotion, and response to CESU correspondence and administrative actions.

- 12. Agreement to relay agency-specific research, technical assistance, and educational needs and associated funding opportunities to other institutional/organizational members (e.g., faculty, students).*

CSG agrees to relay agency-specific research, technical assistance, and educational needs and associated funding opportunities to other institutional/organizational members of the CESU.

- 13. Signature (or endorsement) from an appropriate official, with authority to commit institutional resources in a binding multi-year federal cooperative and joint venture agreement (e.g., president, executive director, chief financial officer, vice president for research, director of sponsored programs).*

CSG Executive Director, Tricia Miller has authorizing CSG to commit resources to support the CESU. This commitment is included in our cover letter.

- 14. Letter(s) of support from one or more CESU federal agency partners sponsoring the new partner's application, including a description of successful past collaborative work supported through federal financial assistance awards.*

At the end of this application, we have provided letters of support from partners at:

Department of Defense – U.S. Air Force

Bureau of Land Management

National Park Service

U.S. Geological Survey



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 633D AIR BASE WING
JOINT BASE LANGLEY-EUSTIS VA

20 January 2021

Alicia M. Garcia, USAF
Natural Resources Program Manager
633d Civil Engineer Squadron
37 Sweeney Blvd
Joint Base Langley-Eustis-Langley, VA 23665

Chesapeake Watershed Cooperative Ecosystems Studies Unit
University of Maryland Center for Environmental Science
Appalachian Laboratory
301 Braddock Road
Frostburg, MD 21532

Dear Members,

I am writing in support of the application by Conservation Science Global (CSG) to participate in the Chesapeake Watershed Cooperative Ecosystem Studies Unit (CWCESU). Conservation Science Global has assisted JBLE-Langley, a U.S. Air Force Installation, in understanding both shorebird movement patterns and techniques for raptor management. These partnerships have supported JBLE-Langley in our efforts to reduce the frequency of Bird Aircraft Strike Hazards (BASH) related to flight mission operations. CSG also works closely with the US Fish and Wildlife Service and the US Geological Survey, which has facilitated communication between JBLE-Langley and our federal wildlife management partners. Their projects focus on movement of animals and how those movements inform population level effects to wildlife from civilian and military flight operations as well as other anthropogenic factors. Additionally, CSG is very successful at translating targeted research into peer-reviewed publications which inform cutting edge management of wildlife.

In 2018, CSG worked with JBLE-Langley to generate a model predicting the movement of shorebirds onto the Langley airfield based on predictable environmental conditions. This work was conducted following a serious mishap between a fifth generation aircraft and shorebirds. This model is now used as one of the tools JBLE-Langley airfield safety managers can use each day when evaluating the avian hazard conditions present within JBLE-Langley airspace. Since implementing this model into our daily evaluation of avian hazards, no major mishaps involving shorebirds have occurred. Protection of both sensitive bird species and human life are a direct result of the work conducted for JBLE-Langley by CSG.

Currently CSG is working with JBLE-Langley to assess new management techniques related to the booming regional population of bald eagles. Together with the Virginia

Global Power For America

Department of Wildlife Resources we are evaluating the efficacy of translocation of bald eagles as well as their response to hazing when present on the airfield. This study will help the installation use evidence-based practices to prevent collisions between military aircraft and our national bird. I have no doubt that adding CSG to the CWCESU would benefit other federal entities in conducting responsible management of wildlife to protect both human life and mission safety. If I can be of further assistance, please do not hesitate to contact me by phone at 757-764-1090, or via e-mail at alicia.garcia.4@us.af.mil.

Sincerely

Alicia M. Garcia, DAFC
Natural Resources Program Manager



United States Department of the Interior



BUREAU OF LAND MANAGEMENT
California State Office
2800 Cottage Way, Suite W1623
Sacramento, CA 95825
www.blm.gov/office/california-state-office

January 20, 2021

Memorandum

To: Chesapeake Watershed Cooperative Ecosystems Studies Unit

From: Amy L. Fesnock Parker, State Lead for Wildlife and Listed Species

Subject: Support for Inclusion in the Chesapeake Watershed CESU

I am writing to extend my full support for the inclusion of Conservation Science Global (CSG) in the Chesapeake Watershed Cooperative Ecosystem Studies Unit (CWCESU).

CSG projects focus on movement of animals and how those movements inform population level effects to wildlife by renewable energy development and other anthropogenic factors. Since 2017, CSG has assisted California BLM in understanding effects of wind and solar energy development on conservation of wildlife, including raptors such as the golden eagle. In addition to the work specific to renewable energy, CSG's research on common ravens in the Mojave and Sonoran Desert provides insights to raven behaviors and habitat use related to anthropogenic factors. This study provides information to a multi-agency raven work group in which we are making management decisions to protect federally threatened Mojave Desert tortoise from raven predation.

I believe the scientific research conducted by CSG aligns with the CESU mission and objectives. Their staff have developed and maintained effective partnerships with several federal agencies (BLM, USFWS, USGS). CSG is dedicated to applied science; the results of their studies provide scientifically sound knowledge that BLM has used to support decision making and has been used to resolve policy decisions. CSG is very successful at translating research findings into peer-reviewed publications that become important references for federal land management agencies. Their manuscripts are well received, and demonstrate their dedication to independent, objective research which supports management of federal trust resources in an effective and prudent manner.

Because of the support that CSG provides to federal agencies, I support their application to become a member of the CWCESU. If you have any questions, please do not hesitate to contact me by phone (916-247-2964) or email (afesnock@blm.gov).



United States Department of the Interior



NATIONAL PARK SERVICE

Denali National Park & Preserve
Mile 237 Parks Highway
P.O. Box 9
Denali Park, AK 99755

Date: January 14, 2021

Subject: Conservation Science Global's CESU application

To: Whom It May Concern

I am writing in support of the application by Conservation Science Global (CSG) to join the Chesapeake Watershed Cooperative Ecosystem Studies Unit (Chesapeake Watershed CESU). CSG staff are specialists in eagle behavior, eagle management and conservation, movement ecology, and managing and analyzing animal movement data. Since the inception of CSG, their staff have provided highly specialized data management and analysis services as well as technical insights for several National Park Service (NPS) projects on golden eagles that I manage, including telemetry data management and understanding the movement ecology of eagles to inform conservation.

CSG's membership in the Chesapeake Watershed CESU would provide for additional collaborative opportunities between CSG and NPS scientists and staff. Based on my very positive and productive experiences and collaborations with CSG staff, I am recommending CSG as a member of the Chesapeake Watershed CESU.

Please do not hesitate to contact me if you have any questions (contact info below).

Sincerely,
/s/ Carol L. McIntyre

Carol McIntyre, PhD
Wildlife biologist
Denali National Park and Preserve
Carol_McIntyre@nps.gov
Phone: 907-455-0671



United States Department of the Interior
U. S. GEOLOGICAL SURVEY
Forest & Rangeland Ecosystem Science Center
970 Lusk St.
Boise, ID 83706

Chesapeake Watershed Cooperative Ecosystems Studies Unit Members
c/o Eric Davidson
University of Maryland Center for Environmental Science
Appalachian Laboratory
301 Braddock Road
Frostburg, MD 21532

18 January 2021

Dear Chesapeake Watershed CESU Memers:

I am writing in support of the application by the Conservation Science Global (CSG) to participate in the Chesapeake Watershed Cooperative Ecosystem Studies Unit network.

CSG is a national leader in understanding human-wildlife interactions, especially in the area of wind-wildlife interactions, but also extending into many other aspects of wildlife management. Recently they have assisted my agency (USGS) as well as the US Fish and Wildlife Service, the US Bureau of Land Management, and the National Park Service in understanding movement of animals, and how those movements may be impacted by wind energy development and other anthropogenic pressures. Specific projects include understanding the effects of wind energy development on bald eagles in the upper Midwest (USFWS), understanding movements of ravens and eagles in California, and how those impact management of public lands both to protect endangered Mojave desert tortoises and to manage wind energy development, and understanding movements of golden eagles from Denali National Park, to understand how those populations connect to eagles in other parts of the continent. Each of these efforts, and may others, have been accompanied by grants or contracts whose award process would have been facilitated if they had been a part of a CESU. Furthermore, all this work aligns closely with the CESU mission and goals and, in each project, they have been effective at fulfilling the roles and responsibilities of a nonfederal partner. Finally, CSG is hugely successful at channeling these research efforts into scientific publications that form the basis for management actions by federal partners.

Based on the many ways in which CSG supports agencies within the federal government, I support the application of CSG to be a member of the Chesapeake Watershed Cooperative Ecosystem Studies Unit. If you have any questions, please do not hesitate to contact me by phone (208-426-5232) or email (tkatzner@usgs.gov)

Sincerely,

A handwritten signature in black ink, appearing to read "Todd E. Katzner".

Todd Katzner, Ph.D.
Research Wildlife Biologist