VIRGINIA WORKING LANDSCAPES

Annual Report 2019



Smithsonian Conservation Biology Institute

irginia Working Landscapes (VWL), a program of the Smithsonian Conservation Biology Institute (SCBI) in Front Royal, Virginia, promotes the conservation of native biodiversity and sustainable land use through research, education, and community engagement.

CONTENTS

Staff Listing	3
Director's Letter	. 4
Where We Work	5
Conservation Science	. 7
Education & Engagement	15
Acknowledgements	25
Financial Report	27

2019 VWL TEAM

STAFF



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Charlotte Lorick Program Coordinator

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MESSAGE FROM THE PROGRAM DIRECTOR

n the ten years I've been with VWL, from a citizen scientist to program director, I've felt proud to be involved with a program that brings our community closer to our natural world. It opens our eyes to novel species, breathtaking landscapes, and a deeper understanding of the relationships that keep our earth's systems in balance. But when I'm asked what excites me the most about this program, it almost always comes down to the people. Absorbing the enthusiasm from our citizen scientists each spring, learning tricks of the trade from landowners experimenting on their properties, and supporting the growth of students and interns who contribute to our efforts with each passing season – all of these are interactions that make me optimistic about the future of conservation in our region and beyond. After all, conservation begins with people. And it is more effective when those people work together combining strengths, resources, and a concrete vision to make a difference.

In 2019, the impacts of our internship program really came to fruition, as three of our 2018-19 interns began graduate school pursuing research derived from their experiences with VWL. We welcomed a new cohort of interns to our team who enhanced our program by bringing in new knowledge, ideas, and a zest for collaborative learning. Read more about their projects in the "Training the Next Generation" highlight on page 17.

VWL research gained new traction in the scientific community in 2019. Our publication on managing habitat for wintering bird communities became one of the top downloaded papers for The Journal of Wildlife Management in the last two years, corroborating the value of conducting research in collaboration with landowners and using that research to help inform management recommendations.

We also initiated new programs to enhance conservation-based educational opportunities for the surrounding community (see page 21). These programs created a space for invigorating conversations about land management, local species ecology and innovative tools for merging conservation management with agriculture.

All of these accomplishments arise from the personal relationships we share with you – our neighbors, our students, and our colleagues. Thank you for working with us to move conservation forward in our community and for making 2019 a year to remember. I look forward to building even more momentum with you in 2020.

Amy Johnson, PhD

SURVEY NETWORK



"Virginia Working Landscapes has been an important partner for helping us to understand what flora and fauna are currently inhabiting our farmlands, so that we can track recruitment and improvement in the future in our quest to enhance biodiversity."

- Keith Nevison, Farm and Nursery Manager, Monticello

2010-2019 VWL Survey Network Acreage



NEW PROPERTY HIGHLIGHT

Tufton Farm

Albemarle County

Tufton Farm is a 650+ acre farm originally patented in 1755 by Peter Jefferson, father of Thomas Jefferson, and throughout its recent history has comprised a major landholding of the Monticello Plantation. Today, Tufton Farm is home to the Thomas Jefferson Center for Historic Plants and the Monticello Center for Food & Farming, which aims to showcase a national model for regenerative agriculture, along with active, experimental land stewardship. In the years ahead, Tufton Farm will work with partners to nurture and promote healthy

habitat for wildlife, including nesting birds, amphibians and fish in their streams, and mammals using marginal fields and forested corridors.



active research projects 57 citizen scientist volunteers 40 volunteers 40 volunteers 40 volunteers 40 volunteer 40 volunte

369 biodiversity surveys conducted **366** individual species counted

CONSERVATION SCIENCE

Native bumble bee (Bombus sp.) pollinating native mountain mint (Pycnanthemum muticum) at Jones Nature Preserve in Rappahannock County, VA. Photo by Charlotte Lorick

PUBLICATIONS

The publication, Effects of Grassland Management on Overwintering Bird **Communities,** in The Journal of Wildlife

Management, provides insight into the benefits of native warmseason grasses for over-wintering bird communities, and recommends that the management of fields, regardless of field composition, be deferred until late winter/ early spring to optimize cover for overwintering bird communities. This paper was authored by VWL's Dr. Amy Johnson and colleagues at Smithsonian

The publication, Projecting Mammal Distributions in Response to Future Alternative Landscapes in a Rapidly Transitioning

Mason University.



Region in the Remote Sensing Journal, highlights how future human population growth and changes in land cover might affect mammal distributions in northern Virginia.VWL citizen scientists and staff contributed data to the research project and publication authored by colleagues at Smithsonian Conservation Biology Institute.



Conservation Biology Institute and George

2019 Research Collaborators

Blandy Experimental Farm Center for Species Survival, SCBI Changing Landscapes Initiative, SCBI Conservation Ecology Center, SCBI The Clifton Institute Department of Nutrition Sciences, NZP/SCBI George Mason University James Madison University, X Labs Manassas National Battlefield Park Movement of Life Initiative, SCBI

National Park Service

North American Orchid **Conservation Center**

Oak Spring Garden Foundation

Smithsonian Environmental Research Center

Smithsonian-Mason School of Conservation

Smithsonian Migratory Bird Center

Smithsonian Working Lands & Seascapes

University of Virginia

Virginia Department of Game and Inland Fisheries

Virginia Master Naturalists

Virginia Tech

CONSERVATION SCIENCE

Unraveling the mystery of meadowlarks

s part of our grassland bird conservation and research program,VWL teamed up with Smithsonian's Migratory Bird Center (SMBC) in 2019 to pilot a study to track eastern meadowlarks across the Piedmont region using GPS and VHF tracking technologies. Although VWL research has demonstrated that meadowlarks occur in VA year-round, we don't know if populations are year-round residents or if observed overwintering birds are short-distance migrants from northern populations. However, knowing this will help identify appropriate conservation measures for supporting populations on both breeding and wintering grounds.

IMPACT | Smithsonian's Migratory Bird Center (SMBC) has been leading efforts to elucidate full annual cycle movement patterns in multiple species using innovative tracking technologies. Little to no research, however, has focused on the movement ecology of eastern meadowlarks, which remain in predominantly privately-owned grasslands yearround. Knowing which habitats meadowlarks use at different times of year is critical for developing best management practices that support populations throughout their full annual cycle.

The overall goal of this study is to pilot meadowlark tagging methods that will build capacity for multistate research collaborations while identifying important information about their full annual cycle. By understanding how the species utilize habitats throughout the year we can refine management recommendations for conservation.

Funding for this project has been provided by The National Zoo's Conservation Nation program and a Friends of the National Zoo (FONZ) Conservation Grant.

Learn more about the project at www.vaworkinglandscapes.org/conservation-science/ projects



WHY MEADOWLARKS?

Grassland birds are declining more steeply than birds in any other biome in North America. The eastern meadowlark, an iconic indicator species of eastern grassland habitats, has declined by more than 70% since the 1970's. Declines have been hypothesized to be caused by agricultural intensification and habitat loss on both breeding and wintering grounds, and are expected to be exacerbated by climate change.



This page: Top & bottom, Eastern meadowlark (Sturnella magna) with recently outfitted nanotag backpack in the fields at SCBI. Photos by Opposite page: VWL Program Director, Dr. Amy Johnson, holds a banded female eastern meadowlark in preparation for release at SCBI. Photo

October Greenfield

by Amy Scarpignato

The making of a meadow: an experiment in grassland restoration

n 2019,VWL initiated a new collaboration with the Clifton Institute and the Oak Spring Garden Foundation to design a study focusing on grassland restoration and management techniques. This research was fueled by a desire to help generate local knowledge about the outcomes associated with establishing and managing native grasslands in Virginia, an understudied and increasingly rare ecosystem that supports many species of native birds, plants, and pollinators.

The outcomes of any restoration project depend on a whole suite of ecological factors, ranging from land use history and soil characteristics to the installation and management methods used. Using a seed mix developed specific to this region, this collaborative experiment will account for site-specific conditions at three locations - SCBI, The Clifton Institute, and Oak Spring Garden Foundation – and document grassland installation and management methods over the next several years. This will include conventional

as well as organic installation methods, along with common grassland management regimes including prescribed burning and bush hogging.

IMPACT| Results from this experiment will improve our understanding of how eastern grassland restorations are impacted by interactions of existing site conditions under varying management regimes. Findings will be shared with community members to provide insights on installation and management costs, successes and challenges, and resulting plant communities and will also be shared with restoration ecologists to help inform future eastern grassland research.

Funding for this project has been provided by the Oak Spring Garden Foundation.

Learn more about the project at www.vaworkinglandscapes.org/conservation-science/ projects

WHAT ARE NATIVE GRASSLANDS AND WHY ARE THEY IMPORTANT?

Native Virginia grasslands support many species of native flora and fauna. By studying these grasslands and restoring degraded ones with native species, scientists and landowners can help protect these rare ecosystems and the plants, pollinators, and birds that rely on them.

Though we have lost most of our historical native grasslands to agriculture, development, and forest encroachment, we know they existed due to the persistence of local, sunloving native species in roadsides and field edges. A few semi-natural, prairielike grasslands remain in Virginia in certain powerline rights-of-way, in parks such as Manassas National Battlefield Park, at military bases and private properties. These grasslands have been maintained due to periodic disturbances, such as mowing or burning, that prevent them from growing into shrublands or forests. The remnant plant communities found in these locations are dominated by native warm-season grasses such as little bluestem (Schizachyrium scoparium) and Indiangrass (Sorghastrum nutans) and forbs including narrow-leaf mountain-mint (Pycnanthemum tenuifolium), ticktrefoils (Desmodium spp.), and goldenrods (Solidago spp.).





This page: Brown-belted bumble bee (Bombus griseocollis) visiting hoary mountain-mint (Pycnanthemum incanum) in a native pollinator meadow at Oxbow Farm in Warren County, VA. Photo by Charlotte Lorick

Opposite page: Initial plowing as part of establishment protocol for organic meadow plots in experimental fields at SCBI. Photo by Jordan Coscia

Searching for orchids: indicators of forest ecosystem integrity

n collaboration with Smithsonian's Changing Landscapes Initiative (CLI) and the Smithsonian Environmental Research Center (SERC),VWL added a new survey to its roster in 2019 to search for forest orchids across our study area. Our objectives were to understand if the presence of orchids can give us insight into forest ecosystem health. Orchid surveys began in the spring of 2019 and extended into late summer. Our team of citizen scientists was keen to step up to the challenge when asked to join this new survey effort – with twenty orchid surveyors deployed in the first season to help us document over 381 orchids across eleven sites.

IMPACT | This project is generating new knowledge about terrestrial orchids in Virginia and the Mid-Atlantic region and enhancing our understanding of the types of early indicators conservationists can use to monitor forest health. In addition, project scientists and volunteers are collecting valuable seed and root tissue which contributes to the North American Orchid Conservation Center's national collection of seed and orchid mycorrhizal fungi. The seed and fungal collections are available to help conservation efforts across the U.S. and Canada.

Funding for this project has been provided by a Smithsonian Women's Committee Grant.

A RARE FIND!

In the pilot year of orchid surveys, VWL citizen scientists found a previously unknown population of a rare orchid on a farm in Rappahannock County.

The purple fringeless orchid is ranked as critically imperiled in Virginia, meaning there are likely fewer than 1,000 plants left across the state. Purple fringeless orchids are considered globally secure, but throughout most of its range it is protected due to its rarity and the vulnerability of its wetland habitats.

Closeup photo of the rare purple fringeless orchid (Platanthera peramoena) found by two VWL citizen scientists after a survey at a farm in Rappahannock County, VA. Photo by October Greenfield



Grassland Biodiversity Surveys

June marked the peak of VWL's survey season with our bird, pollinator, plant, and new orchid surveys in full swing. Our citizen scientists, staff, interns, and landowners were all involved in surveying 35 different properties across our 16-county study region. These surveys help us better understand the factors that affect the region's biodiversity and help inform best land management practices for people and wildlife.



Motus Tower Installation

In collaboration with SCBI project partners at Movement of Life and Center for Species Survival, VWL assisted in the construction of a new Motus tower on a property in Rappahannock County. The Motus Wildlife Tracking System uses coordinated radio-telemetry towers and nano-tag receivers to collect animal movement data across the globe. The new receiver stations will enable researchers to triangulate locations of tagged animals moving through the region. This project provides VWL with an opportunity to learn more about the species in our region and their continental-scale movements while connecting us to a nationwide collaborative research network.



Impacts of White-Tailed Deer on Native Forests

As part of an ongoing study in collaboration with SCBI's Conservation Ecology Center, the VWL team conducted surveys in a deer exclosure at Kinloch Farm in Fauquier County. Sapling and seedling abundance and diversity were documented in the Fall of 2019. The study investigates the impacts of deer browse on tree regeneration with additional survey sites in deer exclusion areas at SCBI and in Shenandoah National Park.



Coyote Movement

In collaboration with (and with funding from) Smithsonian's Conservation Ecology Center, the Zoo's Global Health program, and the Center for Species Survival, we launched a coyote movement pilot project in 2019. Two adult coyotes have been collared at SCBI and trapping efforts will continue in 2020. This project seeks to shed light on coyote movement behavior and habitat use at SCBI. Success in the pilot phase may allow an expansion of this field research effort beyond the SCBI campus and onto VWL properties in the surrounding counties.

EDUCATION & ENGAGEMENT

Citizen scientist, Jennifer Mara Holder, conducting a VWL bird survey in a rotationally-grazed cattle pasture at Edgehill Farm in Loudoun County, VA. Photo by Charlotte Lorick

LANDOWNER **RESOURCES**

VWL developed guidelines and handouts in 2019 to provide science-based information to landowners on land management techniques that support biodiversity.



The Field Management Guidelines for Virginia's Grassland and Shrubland Birds handout provides a management calendar (featured in graphic above) and other guidelines for landowners interested in considering bird nesting and wintering needs in their field management decisions.



To coincide with our Wildlife in Winter 2019 workshop, we developed a handout, **Tips for Winterizing** your Yard for Wildlife that provides suggestions on how to support wildlife throughout the winter months.

The information shared in these resources is based off nearly a decade of VWL grassland research.

To view the full guides, visit: www.vaworkinglandscapes.org/education.

EDUCATION 8 ENGAGEMENT





youth éngagement events



community workshops & outreach events



Training the Next Generation of Conservationists

WL has a range of mentorship programs including research fellowships and internships. We also collaborate with the Smithsonian-Mason School of Conservation (SMSC) to offer undergraduate mentorship projects that provide budding conservationists with experience in ecological research, science communication, and community outreach - all necessary skills for developing successful careers in conservation. Meet the 2019 team:

Kelsey Schoenemann, Research Fellow | Kelsey's research focused on investigating how the spatial distribution of land use types and landscape features impact native bumble bee biodiversity. She began pursuing her Ph.D. at the University of Virginia in Fall 2019. Her doctoral research will explore links between bee population dynamics and land management practices.

October Greenfield, Intern | October focused on bird research projects including grassland bird surveys, drone surveys, and meadowlark tracking. She also organized VWL's Conservation Science newsletters, planned events, and developed outreach materials. She transitioned from VWL to work fulltime for another local conservation NGO.

Intern October Greenfield giving a presentation on bird conservation before leading a bird walk for a youth summer camp program at Wardensville Farm Market in West Virginia. Photo by Charlotte Lorick

Jordan Coscia, Intern | Jordan collected and managed plant data from our experimental grassland restoration project. She was accepted to a Ph.D. program at Virginia Tech in December 2019 and will begin her studies in 2020. She will continue to work with VWL to examine the effects of restoration methods on plant communities.

Eric Allen, Intern | Eric focused on botany projects including orchid surveys, grassland plant surveys, and demo plot surveys. After his internship, Eric began a Masters program at the University of Oklahoma.

Jamie Melvin, SMSC Practicum Student | Jamie prepared training materials and protocols for the citizen science orchid survey training and conducted field work to prepare orchid survey sites.

Elizabeth Munn, SMSC Practicum Student | Elizabeth created outreach materials for Conservation Discovery Day and VWL's website. She re-designed a native bee display box and created a Storymap to inform landowners about the benefits of native plants.

Nicole Rilee, SMSC Research Student | Nicole placed and collected data from camera traps at potential coyote project trapping sites to study behavior and help select trap sites.

Maggie Deely, SMSC Research Student | Maggie sorted and identified arthropod samples from four VWL sites to explore changes in arthropod diversity and abundance over time. We are excited to have her stay with us as a VWL intern in 2020.

Oliver Collier, Research Student | Oliver is an undergraduate student from James Madison University. He joined the VWL team in the summer of 2019 to carry out his senior capstone project evaluating The Use of Thermal Imaging and Unmanned Aerial Systems in Grassland Bird Research.

















Citizen science: the heart of Virginia Working Landscapes

WL's work is designed for engagement with a large, diverse human network – landowners, other scientists, land management professionals, and volunteer citizen scientists. Above all, it is the citizen scientists who power the VWL program and form the heart of our engagement effort each year. In 2019, citizen scientists helped VWL expand our program to include the new orchid project, which allowed us to survey forest plots across Warren, Rappahannock and Fauguier counties for these rare and under-studied species. The effort on the part of twenty citizen scientists to master new survey protocols lead to a strong pilot field season, helping our research team establish a database of orchids and set the course for the project to expand in 2020.

Our citizen science programming broadens the professional training we provide for VWL interns and students. With opportunities to join citizen scientists for field surveys, farm walks, and protocol training, interns and students learn from some of the best naturalists in our community while sharpening their professional skills as public speakers and writers.

While the VWL staff works hard to coordinate access to survey sites, organize training events, and arrange for farm walks or ID sessions, our citizen scientists are in many ways leading our survey work. They connect us to landowners interested in our surveys, or they participate as landowners themselves. They provide the subject matter expertise crucial to our annual farm walks (four of these in 2019) and our all-important identification sessions (eight of these in 2019). They recruit new volunteers among their Master Naturalist chapters and helped us bring in nineteen new volunteers in 2019. They lead or co-lead VWL's classroom training sessions on pollinators and plants and helped VWL identify nearly 5,000 plant specimens and over 1,800 bumble bee specimens in 2019 alone.

Beyond the programmatic benefits citizen science brings to VWL, our volunteers connect our staff and the larger Smithsonian Institution to our community and keeps each of us motivated. Whether our volunteers are veterans who lead us, or newly arrived folks coming to pitch in, they bring vigor and meaning to the shared work of conservation.

"Get to know the birds and the bees.

Love the environment – it needs all of us to get out and get our fingers dirty."

- Cathy Mayes, VWL Citizen Scientist since 2010





Top & middle: VWL citizen scientists learning to identify orchids during a VWL training walk in early spring. Photos by Amy Johnson

Bottom & opposite page: Citizen scientists on the annual bird walk at Learning Tree Farm in Fauquier County, VA. Photos by Joe Guthrie





1,625 volunteer hours in 2019 **15,041** volunteer hours since 2010

2019 Annual Report 20

Workshops and Event Highlights

CBI and VWL prioritize education and training at all levels and we share scientific research that informs conservation practices on local and global scales. We regularly host expert-led workshops, trainings and Electures that are open to the public at our Front Royal campus.

In 2019,VWL reached more than 4,000 people across more than 40 events, The following page highlights some of our workshops and events from 2019, including several new events we plan to offer as regular annual educational opportunities moving forward.

Conferences

January - July | The work of VWL was featured at the Annual Woods and Wildlife Conference in Culpeper, VA. Dr Amy Johnson gave the plenary presentation to a sold-out crowd, sharing insights on loggerhead shrikes and recommended management to support declining populations. Dr. Johnson also sat on an expert panel on private lands research at the American Association for the Advancement of Science Conference in DC. VWL was also active at several more conferences including the Native Plant Symposium, the Conservation Communications Conference, and the Conservation Center for Species Survival Conference.

Emerging Scientist Lecture Series

June & November VWL hosted two presentations as part of a new lecture series featuring novel research by emerging scientists. The first lecture by Dr. Ashley Kennedy, former student of Dr. Doug Tallamy, highlighted her research on bird diets. The second lecture by Virginia Tech PhD student, Shayan Ghajar, and Mike Maslanka, from the SCBI Department of Nutrition, featured current research on the use of native warm season grasses for both equine forage and conservation benefit.

Presentation by Dr. Ashley Kennedy at SCBI for the VWL Emerging Scientist Lecture Series. Photo by Charlotte Lorick



Native Meadow Field Day

July |VWL and partners at The Clifton Institute, along with state botanist, Gary Fleming, hosted a dynamic field day workshop. While touring native meadows of varying degrees of establishment at several properties in Fauguier County, participants and landowners shared information on plant identification and native meadow establishment and management.

VWL Annual Meeting

March | VWL hosted its first Annual Meeting in several years, gathering almost 100 people from the community to learn about our program activities and vision.

May - October | VWL participated in several events geared toward youth education. We led a spring bird walk for middle-schoolers at a camp in West Virginia and set up booths at several family events for Earth Day at the National Zoo and Conservation Discovery Day at SCBI.

Landowner Gatherings

June & September | VWL facilitated our first landowner gatherings at Jones Nature Preserve and Bean Hollow Grassfed. These are the first in our series of gatherings we are organizing annually to facilitate landowner networking and information sharing and for farms to highlight management practices for conservation.



Winter Wildlife Workshop

November | VWL hosted a Winter Wildlife Workshop with lectures by VWL's Amy Johnson and T'ai Roulston (Blandy Experimental Farm) about how to support overwintering birds, what pollinators need during winter months, and how landowners can help wildlife in winter. The lectures were followed by a field trip to Jones Nature Preserve in Rappahannock County.



Youth Education



ACKNOWLEDGEMENTS

2019 Citizen Scientists

Sally Anderson Matt Argon Don Arnold **Bonnie Beers** John Beardsley **Bill Birkhofer** Karl Brotzman Carolynn Brunette Mark Bruns Alex Bueno **Bob Butterworth** Greg Chapman Sally Cunningham Hillary Davidson Sandy DiCarlo Art Drauglis

Eve Gaige Paul Guay Ben Hamm Maureen Hamm Joyce Harman **Bert Harris** Laura Helm Kate Heneberry Jennifer Holder Teri Holland **Diane Holsinger** Kristen Hopkins Phil Kenny Carolyn Kupec Marilyn Kupetz Ashley Landes

2019 Survey Properties

Annadale **Apple Hill Farm** Ayrshire Farm Bristoe Station **Battlefield Heritage** Park **Castleton View** Chilton's Gate

The Clifton Institute **Cleveland Farm** Deerfield Farm

DuBois Property

Edgehill Farm

Eldon Farms

Haywood Manor

Howland Farm of Virginia

Jones Nature Preserve **Kinloch Farm** Learning Tree Farms Lazy Dog Farm Marriott Ranch Merriewood Farm Middle Mountain Farm Monte Vista Farm Mount Prospect Mount Vernon Farm

Oak Spring Garden Foundation **Oxbow Farm** Penn Farm **Pettigrew Farm**

Pete Madsen Cathy Mayes Kathy McKenzie Amy Neale **Janet Paisley Phyllis Partain Elizabeth Pass** Darnice Pettigrew **Robert Petty** Shane Pixton Peggy Plass

Patty Lane

Kathy Madsen

Rob Swanson Russ Taylor Clara Thiel **Byron Waltham** Nancy Weiss Allyson Whalley Brad Willet Jan Worthy

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lames Hazel

A savannah sparrow (Passerculus sandwichensis), one of the many threatened grassland dependent bird species, perched on a fencepost at Oak Spring Garden Foundation in Fauquier County, VA. Photo by October Greenfield

ACKNOWLEDGEMENTS VIRGINIA WORKING LANDSCAPES

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SOURCES OF FUNDING



OPERATING BUDGET



PROGRAM EXPENDITURES



45% Research

17% Administrative & Development

FINANCIAL REPORT

A sweat bee gathering pollen from native golden ragwort (Packera aurea) along a stream bank in Rappahannock County, VA. Photo by Charlotte Lorick



Together we can conserve Virginia's diverse wildlife and rich landscapes.

To donate to VWL, visit: www.vaworkinglandscapes.org/donate

100% OF VWL FUNDS COME FROM GRANTS, DONATIONS & COMMUNITY SUPPORT

The Smithsonian is a 501 (c)3. All contributions are tax deductible.

Front & back covers | A monarch caterpillar (Danaus plexippus) on swamp milkweed (Asclepias incarnata) in Rappahannock County, VA. Photo by Charlotte Lorick

VIRGINIA WORKING LANDSCAPES

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