Virginia Association of Counties
ACHIEVEMENT AWARDS

SUBMISSION FORM

All submission forms must include the following information. Separate submission forms must be turned in for each eligible program. **Deadline: July 1, 2022.** Please include this submission form with the electronic entry. If you do not receive an email confirming receipt of your entry within 3 days of submission, please contact Gage Harter.

PROGRAM INFORMATION

County: **Fairfax County**

Program Title: **Create a Caddisfly**

Program Category: **Communication**

CONTACT INFORMATION

Name: **Danielle Wynne**

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SIGNATURE OF COUNTY ADMINISTRATOR OR DEPUTY/ASSISTANT COUNTY ADMINISTRATOR

Name: Rachel Flynn

Title: Deputy County Executive

Signature:

Program Title: **Create a Caddisfly**

Program Category: **Communications**

Include an executive summary of the program (no more than one page double-spaced) that can be used as a quick reference guide for judges.

Executive Summary:

In a world gone virtual, it can be easy to overlook the effectiveness and value of hands-on, educational crafts. With much of our time spent in front of a screen attending Zoom meetings, live stream programs, and on demand educational videos, it can be easy to lose sight of the tools right in front of us. There are incredible benefits to these virtual opportunities but there are equally unique benefits and value that can be found in our kitchen cabinets or in a cardboard toilet paper tube, especially for lower elementary school students. Arts and crafts provide a chance to turn traditional STEM (science, technology, engineering, and mathematics) programming and classwork into STEAM (science, technology, engineering, **arts**, and mathematics) opportunities, giving students the ability to learn about and experience the sciences using both hard and soft skills. The Create a Caddisfly program developed by Fairfax County freshwater ecologists in the Watershed Education and Outreach (WEO)

Figure 1. A created caddisfly

section has become an invaluable and inclusive tool that connects children to their local environment, while encouraging growth and development in the areas of both science and the arts. The program connects students to their local stream ecosystem by exploring the life cycle of a caddisfly, a common

stream insect that builds a house out of sticks, rocks, or leaves that they carry around (similar to hermit crabs) until they emerge as adults. This nearly costless and easily replicable program provides students with a meaningful watershed experience that they may not be able to otherwise have due to constraints of distance, time, or funding. The connection between the local school system, community, and local scientists created through this program ultimately engages and inspires the next generation of scientists.

State the problem, challenge or situation faced by the locality and how the program fulfilled the awards criteria (innovation, partnering or collaboration and a model for other localities). Tell how the program was carried out, including financing and staffing, and the program's results.

The Problem or Need for the Program

Every student should have the opportunity to connect to their local streams and environment. However, with Fairfax County, VA being the 10th largest public school system in the nation with 186,000 students, it can be difficult to engage everyone in meaningful, environmental education experiences. Fairfax County ecologists in the Watershed Education and Outreach (WEO) group have developed several tools and programs that meet this need. However, the predominant focus of most of these programs is for students in grades 4-12. Meeting this same need for students in grades K-3 has been more challenging. Create a Caddisfly introduces lower elementary students to species found in their local stream ecosystems, and connects them to the Chesapeake Bay, and beyond. By creating a program that is meaningful, affordable, transportable, and time efficient, this user friendly "grab and go" tool can be easily replicated.

Description of the Program

Fairfax County Watershed Education and Outreach's mission is to inspire environmental stewardship in students. Teaching these future leaders of Fairfax County about the health of our watershed can increase their connection to the local environment and help reduce the negative impact on water locally. In addition to inspiring students to protect our environment, our main goal is to get students outside. However, with school requirements, location, and financial constraints, it is often not feasible to bring students to a stream or even bring elements of a stream to them. However, a program that can be run for little to no cost using items in your home creates authentic and accessible connections to the local environment for everyone.

Create a Caddisfly combines art and science to explore the life of one of our local stream insects— the caddisfly! During the program, students learn about caddisflies, the houses they make, and how they relate to stream health. Students then make their own caddisfly and house out of craft supplies. Caddisflies are just one type of benthic macro invertebrate, tiny aquatic critters that live on the bottom of our streams. Similar to hermit crabs, caddisflies build and carry around houses for most of their lives until they emerge as adults.

Figure 2. A nymph caddisfly and their "house" built out of twigs.

Different benthic macro invertebrates, and different species of caddisflies, can tolerate different levels of water pollution. Some may be tolerant to pollution, while others may be very intolerant to pollution. The diversity and density of the species found per stream helps us determine the long-term water quality condition of that stream. The Create a Caddisfly program introduces these scientific concepts using an age-appropriate communication method: arts and crafts. By

Figure 3. Create a Caddisfly at an outdoor event.

combining a hands-on craft with the lesson, lower elementary school students get to use their fine motor skills and engage with science through art; they learn that science isn't always about numbers and hard facts, but it can be fun and creative too!

In addition to the engaging and hands-on aspect of this program, what really makes it shine is that it is nearly costless, easily transportable, and easily replicable. To run the program, you only need a few things: Glue, tape, scissors, tissue paper, pipe cleaners, rubber bands, fluff, googly eyes, markers, and construction paper/toilet paper tubes. These items are easy to get and people often already have them at home or in their classroom—but the great thing about Create a Caddisfly is that the materials list is flexible. Children and adults can use their imagination to turn almost any materials into pieces suitable for

this arts and crafts project. Don't have pipe cleaners? Anything long and skinny will do—even a stick from outside! Don't have googly eyes? You can draw the eyes on with a marker instead! Don't have a marker? You can use a pen or a crayon! The flexibility of materials for this program makes it easily accessible.

With the right training and background for the lesson, a teacher or guardian could even run the program on their own. And although the program is often conducted in schools, the ease with which this

Figure 4. Girl Scout getting her Bug Badge.

program can be transported has made it an excellent program for children outside of the classroom setting. For example, Create a Caddisfly has been used to fulfill Boy and Girl Scout badge requirements (the Insect Study and Bug Badge, respectively) and has the flexibility to be scaled up or down depending on the age level.

Advancing Diversity, Equity, and Inclusion

Out of the 141 elementary schools in Fairfax County, 42 schools have been identified for Title 1 grant funding. WEO prioritizes Title 1 schools for in person educational opportunities. Create a Caddisfly is the perfect program for these schools. The simple, accessible materials required for this program allow it to be replicated with very little cost. Additionally, utilizing arts and crafts is a great way to overcome

Figure 5 - Easy to follow directions

language barriers. Staff have created a step-by-step tri-fold board that uses pictures to help participants walk through the process of creating a caddisfly. Providing visual indicators ensures that residents who do not speak English can still follow the directions and participate in the activity. The directions are also being translated into four additional languages: Spanish, Arabic, Korean, and Vietnamese. In addition, the visual step-by-step depiction also helps residents with special needs who benefit by seeing all of the steps laid out in front of them. We are also in the process of developing an "At Home" version of the program, similar to our "At Home Stream Critter Cube Lab" to ensure the program is available to everyone and not just residents who attend specific events.

The Cost of the Program

The cost of Create a Caddisfly is incredibly minimal. With a materials list of only 10 items (listed above), many of which can already be found in a home, classroom, or office, and the ability to modify materials as needed, this program can be virtually free. The biggest cost is the staff time it takes to run the program. This program provides an accessible and meaningful environmental education program that is very inexpensive to run. Staff is developing "Create a Caddisfly at Home" instructions and an associated video guide to promote the program so that it is not dependent on staff availability.

The Results/Success of the Program

While non-quantifiable, Create a Caddisfly has been a much-requested program and several hundred caddisflies have been made by children all across Fairfax County. There have been many "ah ha!" moments when our crafters first realize that our streams are filled with more life than just fish. Caddisflies are creative builders that are as captivating as they are important in our streams. Continuing to introduce science to residents helps break the stereotype that science is boring, or that it's only for certain people.

Combining science and art creates a bridge to connect people to our local ecosystem. Plus, the adults of the party often ask us specific questions while the younger members of their party are crafting. It's a great way to get a bonus captive audience!

Worthiness of Award

The Create a Caddisfly Program is an effective, low-cost option to help scientists create environmental stewards by connecting students to their local environment. It is a creative solution to connect our youngest audience to our streams by combining art and science. The program was developed as a "grab and go" option that includes clear, concise instructions which makes it a very easy program to run for staff. It meets all of our metrics of success as it is meaningful, affordable, transportable, and time efficient. Create a Caddisfly is a meaningful part of our innovative toolbox that engages and inspires the next generation of scientists.

Include a brief overview of the program (2-3 paragraphs) that could be used for press releases, brochures, etc.

Brief Overview

The Create a Caddisfly program developed by Fairfax County freshwater ecologists in the Watershed Education and Outreach (WEO) section has become an invaluable and inclusive tool that connects children to their local environment, while encouraging growth and development in the areas of both science and the arts. The program connects students to their local stream ecosystem by exploring the life cycle of a caddisfly, a common stream insect that builds a house out of sticks, rocks, or leaves that they carry around (similar to hermit crabs) until they emerge as adults. This nearly costless and easily

replicable program provides students with a meaningful watershed experience that they may not be able to otherwise have due to constraints of distance, time, or funding.

The low-tech option of recreating a stream insect with paper, pipe cleaners, and glue, gets us back to the simple joys of arts and crafts. The open-ended program allows little minds to be as creative as they want all while learning about science! Will they create a completely orange caddisfly, or maybe one with a rainbow shell, or maybe one with red and white stickers for their school colors? The design it totally up to them and their imagination! In addition, since the instructions for the craft are made with pictures, this program is a feasible option for multi-lingual communities. This inexpensive, inclusive, and easily replicable program is truly a win-win for the participants and staff. Teaching lower elementary school students about science, while doing a craft, allows them to create something meaningful. The connection between the local ecosystem, community, and scientists created through this program helps inspire the next generation of scientists.