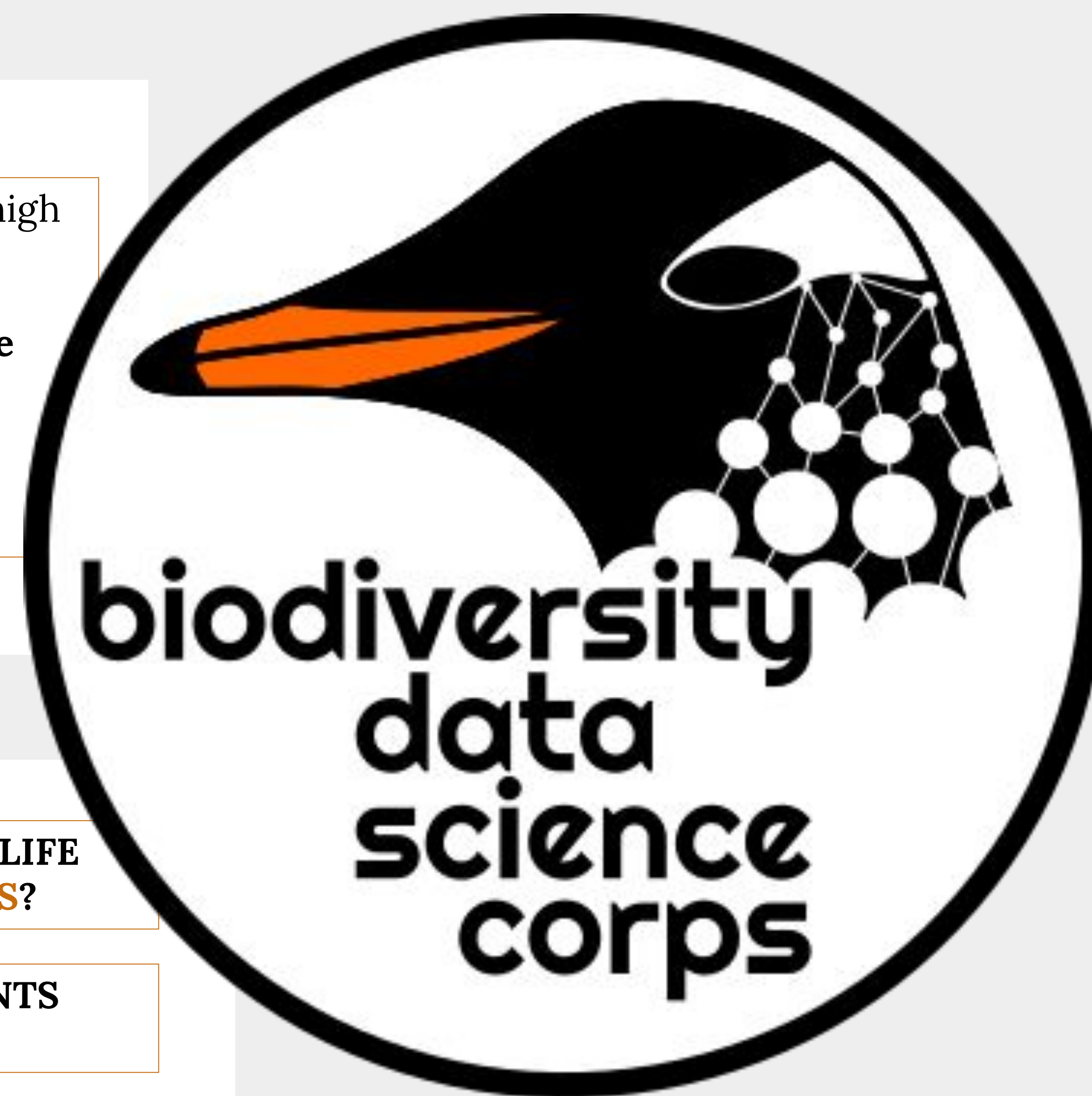# Collaborative Research: HDR DSC - Building Capacity in Data Science through Biodiversity, Conservation, and General Education

Kathleen L. Prudic[1], Greta Binford[2], Ellen K. Bldesoe[1], Ethan Davis,[2] Jeremy McWilliams[2], Jeffrey C. Oliver[1], Mila Pruiett[2], and Jill M. Williams[1]
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INTRODUCTION

- Life science majors are a **popular choice with undergraduates,** and have high levels of diversity compared with other STEM majors

- Life science undergrads are trained in statistics, **but not computer science**

- Early opportunities for computer science training from a life science perspective are needed to **prepare undergraduate students** for professional opportunities in and adjacent to data science

biodiversity data science corps

QUESTIONS

DOES EARLY EXPOSURE TO DATA SCIENCE SKILLS RESULT IN MORE LIFE SCIENCE STUDENTS PURSUING DATA SCIENCE MINORS AND MAJORS?

DOES A CONSERVATION PERSPECTIVE HELP DIVERSIFY THE STUDENTS INTERESTED IN DATA SCIENCE SKILLS AND DEGREES?

DOES A LIBERAL ARTS APPROACH TO PEDAGOGY IMPROVE STUDENT LEARNING AND FACULTY PROFESSIONAL DEVELOPMENT IN DATA SCIENCE?

APPROACH

General Education Course
Foundations In R
Freshman
Narrative Driven
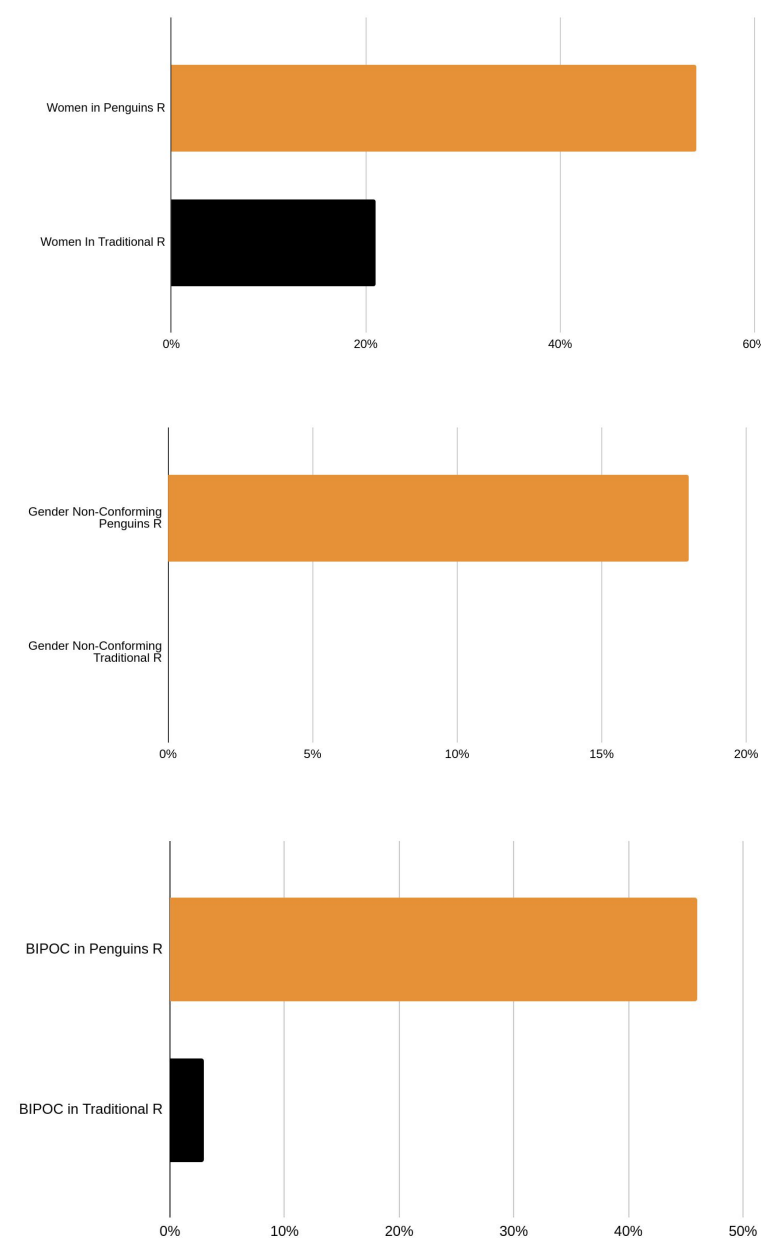*Data In the Wild*
Asynchronous
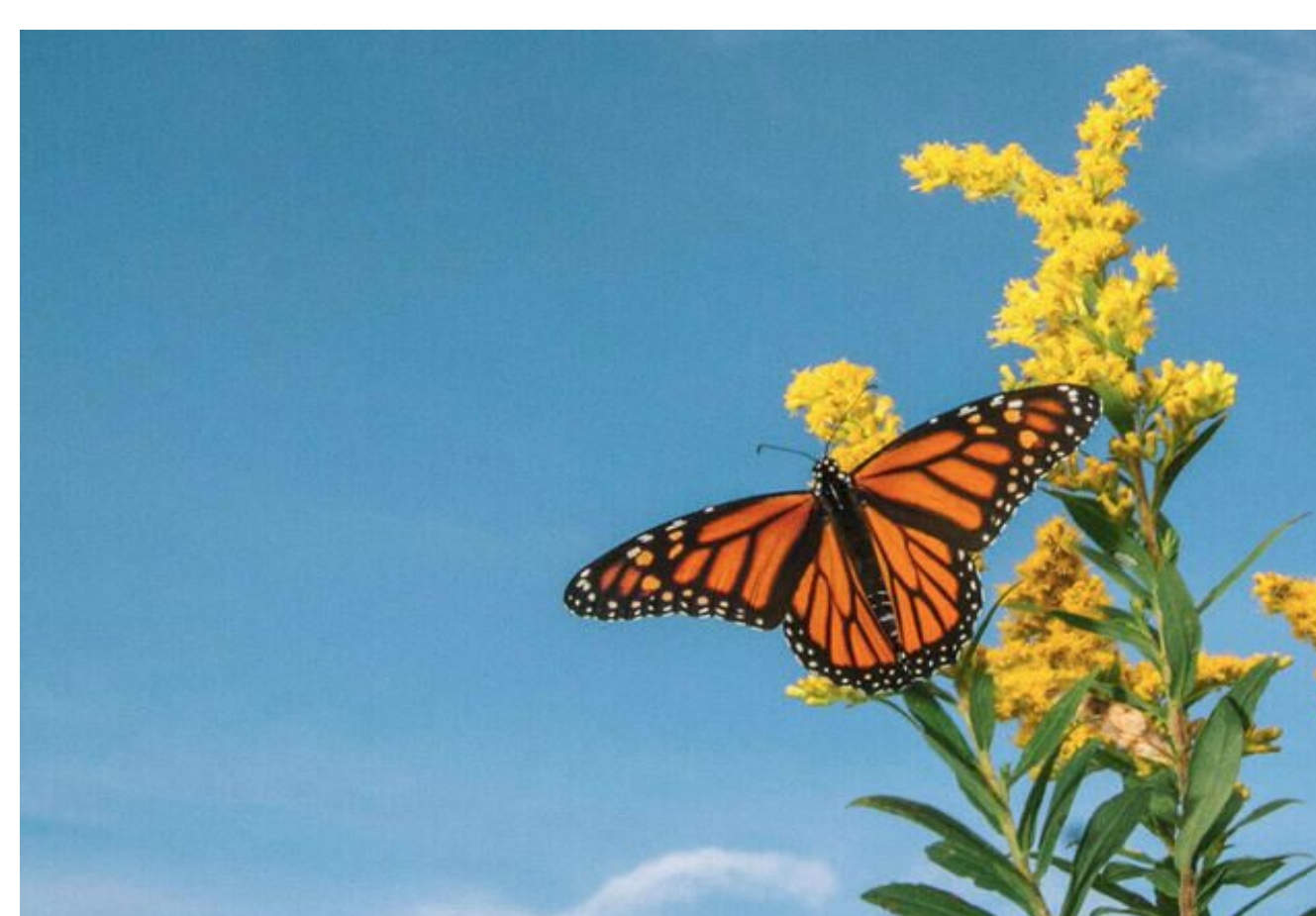
Endangered Species Project Course
Intermediate R and GitHub
Sophomores/Juniors
Project Based
Saving Species with USFWS
Synchronous

Instructor Upskilling Pedagogy Training
Basic - Intermediate R and GitHub
Grad Students/PostDocs/Faculty
Project Based
The Carpentries Instructor Training
Synchronous

RESULTS & DISCUSSION

36% -> 71% reported increased confidence in data science techniques and approaches

42% -> 69% reported considering careers with data science as professional possibilities after course participation

3 students added data science majors/minors to their degree path

THE CARPENTRIES

88% -> 94% felt competent in creating effective learning assignments

79% -> 94% felt competent in creating an inclusive learning environment

42% -> 88% felt competent creating formative learning assessments

84% -> 94% felt competent effectively motivating students

67% of instructors were women
15% of instructors were BIPOC

Endangered Species Course **improves confidence** and **interest** in Data Science technique, degrees, and professions

General Education Course **attracts women, gender non-conforming,** and/or **BIPOC students**

Instructor pedagogy training **improves** course **learning outcomes, activities,** and instructor **confidence**