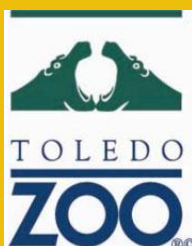



Imperiled Butterfly Conservation & Management



Jaret Daniels & Stephanie Sanchez





Imperiled Butterfly Conservation & Management

Sponsor: Institute of Museum and Library Services –grant or \$377,687

Program Overview: Professional training program designed to strengthen the capacity of institutions and their staff to play a strategic role in the emergent and increasingly important field of insect conservation biology, with a targeted focus on imperiled butterfly recovery.

Objectives:

- 1) improve staff practices through technical training, resources, and mentoring
- 2) promote broader information resource exchange between professionals and institutions
- 3) foster increased interaction and collaboration among professionals and institutions
- 4) strengthen institutional ability to develop new or improve existing butterfly conservation programs.

PROPOSED OUTLINE

BUTTERFLY CONSERVATION IN AMERICA: EFFORTS TO HELP SAVE OUR CHARISMATIC MICROFAUNA

PREFACE

INTRODUCTION: OVERVIEW OF BUTTERFLY CONSERVATION IN THE U.S.

CHAPTER 1: KEY CONSERVATION PROGRAM COMPONENTS

- A. CAPTIVE BREEDING
- B. ORGANISM TRANSLOCATION AND REINTRODUCTION
- C. MONITORING
- D. PUBLIC EDUCATION

CHAPTER 2: PROGRAM DEVELOPMENT

- A. PLANNING AND CONSIDERATIONS
- B. DECISION TREE
- C. PROGRAM VISION, GOALS AND OBJECTIVES
- D. REQUIREMENTS
 - a. FUNDING
 - b. STAFFING
 - c. FACILITIES
 - d. MATERIALS
 - e. PERMITS
- E. PROGRAM EVALUATION

CHAPTER 3: ORGANISM HUSANDRY

- A. CARE REQUIREMENTS
 - a. EGGS
 - b. LARVAE
 - c. PUPAE
 - d. ADULTS
- B. DISEASE PREVENTION
- C. GENETIC MANAGEMENT

CHAPTER 4: PLANT PROPAGATION AND MAINTENECE

CHAPTER 5: RECORD KEEPING AND DATA MANAGEMENT

CHAPTER 6: CASE STUDIES

- A. KARNER BLUE (LYCAEIDES MELISSA SAMUELIS)
- B. SCHAUS' SWALLOWTAIL (HERACLIDES ARISTODEMUS PONCEANUS)
- C. MIAMI BLUE (CYCLARGUS THOMASI BETHUNEBAKERI)
- D. SWAMP METALMARK (CALEPHELIS MUTICA)
- E. TAYLOR'S CHECKERSPOT (EUPHYDRYAS EDITHA TAYLORI)
- F. OREGON SILVERSPOT (SPEYERIA ZERENE HIPPOLYTA)
- G. PALSO VERDE BLUE (GLAUCOPSYCHE LYGDAMUS PALOSVERDESENSIS)
- H. REGAL FRITILLARY (SPEYERIA IDALIA)

CHAPTER 7: POPULATION MONITORING

CHAPTER 8: HABITAT RESTORATION

CHAPTER 9: WORKING WITH AGENCIES AND STAKEHOLDERS

- A. MANAGEMENT AND RECOVERY PLANNING

CHAPTER 10: OPPORTUNITIES FOR COLLABORATION

- A. OTHER CONSERVATION ORGANIZATIONS
- B. ACADEMIC INSTITUTIONS
- C. VOLUNTEERS

CHAPTER 11: NEEDS AND PRIORITIES TO ENSURE SUCCESS

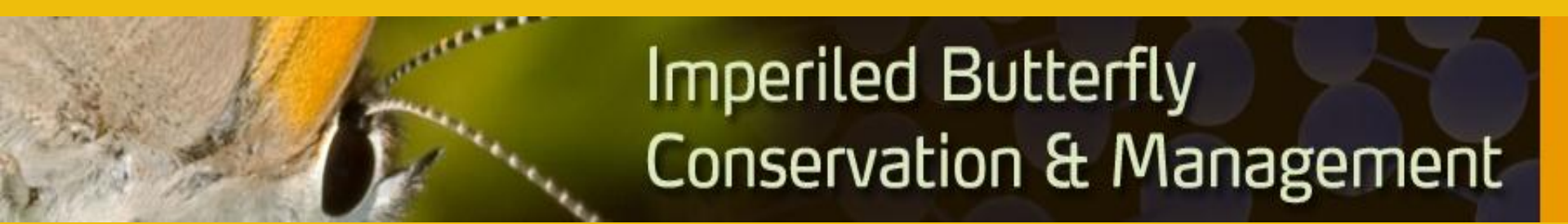
- A. KEY BIOLOGICAL INFORMATION GAPS
- B. ADAPTIVE MANAGEMENT
- C. ANALYTICAL AND RESEARCH SUPPORT
- D. CROSS PROGRAM COLLABORATION
- E. FUNDAMENTAL CONSERVATION QUESTIONS

CONCLUSION

ACKNOWLEDGEMENTS

REFERENCES

APPENDIX 1: USEFUL RESOURCES



Imperiled Butterfly
Conservation & Management

NEXT STEPS

NEW IMLS PROPOSAL

Creation of a Strategic Research Framework for the Conservation Breeding and Reintroduction of Imperiled Butterflies

\$804,681 request over 3 years

The specific goals of the project are to:

- 1) Provide the analytical and research support necessary to rapidly advance species-specific knowledge and best husbandry practices for existing at-risk butterfly conservation programs
- 2) Promote new opportunities institutions/individuals actively participate in scientific research
- 3) Develop a comprehensive and standardized imperiled butterfly conservation and research action plan to more effectively meet the urgent needs of the growing butterfly conservation community.

Research question: The development of a more coordinated and informed research network will increase research participation by institution professionals, promote dissemination of key findings in a timely manner, and more effectively address fundamental conservation questions necessary to improve organism recovery success.

The project is a **broad partnership** involving the Florida Museum of Natural History (FLMNH), Chicago Academy of Sciences' Peggy Notebaert Nature Museum (CHIAS), Brevard Zoo, Oregon Zoo, Roger Williams Park Zoo, Toledo Zoo, Butterfly Conservation Initiative (BFCI)

A **national advisory committee** provides expertise in academic research, zoo-based conservation, habitat restoration, recovery planning and implementation, and stakeholder coordination.

They include: **Scott Hoffman Black**, Executive Director of the Xerces Society for Invertebrate Conservation and Chair of the IUCN Butterfly Specialist Group; **Joanne Earnhardt**, (Ph.D.), Director of the Lincoln Park Zoo's Alexander Center for Applied Population Biology; **Chris Nagano**, Chief, Endangered Species Division, USFWS, Sacramento, CA; **Jennifer Cruise-Sanders**, (Ph.D.), Director of Conservation and Research, Atlanta Botanical Garden; and **Cheryl Schultz**, (Ph.D.), Associate Professor, School of Biological Sciences, Washington State University.

Audience 1: Zoo and natural history museum professionals currently involved in or planning conservation breeding and recovery programs with at-risk butterflies

Needs:

- ◆ Evidence-based best practices for conservation breeding, captive population management and organism reintroductions
- ◆ Assistance with data analysis and interpretation within a larger research context
- ◆ Direction for coordinated research so they can better contribute to the larger knowledge base and move beyond basic organism husbandry

Benefits:

- ◆ Improved management of captive populations and organism recovery efforts
- ◆ Development of an expanded research network
- ◆ Improved research skills and experience
- ◆ Enhanced understanding of the larger conservation science vision
- ◆ Increased opportunities for research involvement and collaboration

Audience 2: Federal, state, and NGO biologists and land managers directing conservation efforts or developing species recovery plans for at-risk butterflies

Needs:

- ◆ Access to basic biological knowledge about target organisms and their habitats
- ◆ Access to an expanded network of facilities capable of undertaking targeted species conservation breeding and recovery programs
- ◆ Access to an expanded research network to address key conservation questions in a timely and cost-effective manner

benefits:

- ◆ Improved strategic and informed decision-making and recovery planning
- ◆ Enhancement of the overall potential for successful organism conservation and recovery

Audience 3: Scientists and students at academic institutions

Needs:

- ◆ Assistance in addressing fundamental questions related to conservation biology, climate change, ecological genetics, landscape ecology, metapopulation dynamics, and restoration ecology

Benefits:

- ◆ Increased opportunities for collaborative research
- ◆ Improved access to data for comparative analysis and ecological modeling
- ◆ Increased access to study organism and research sites

Audience 4: Institutions engaged in or planning at-risk butterfly conservation programs

Needs:

- ◆ Strategic, *a priori* goals to effectively plan, implement and evaluate conservation and recovery programs
- ◆ Increased opportunities to link animal collections directly to conservation of wild populations

Benefits:

- ◆ Enhanced visibility as research and conservation centers concerned about ecosystem health and species recovery
- ◆ More effectively meet local and regional conservation challenges through prioritized research
- ◆ Increased cross-institutional collaboration and dialogue
- ◆ Increased interaction with Federal, state, and NGO biologists and land managers

Intended project results include:

- Analysis of legacy data residing at partner institutions and publication of critical findings.
- A research toolkit with appropriate standardized and science-based experimental protocols that can be easily implemented and replicated, and are fully exportable to institutions.
- Collection and compilation of research data on organisms and their habitats that will advance species-specific knowledge, best practices, management needs and our overall mechanistic understanding of broader ecological relationships.
- Jump-starting the research capacity of multiple institutions and their staff.
(Provide \$20,000/yr to participating institutions)