

Passing through Instars

Butterfly Conservation

Grows Through Experience

An institution's butterfly conservation repertoire often begins with a single project, perhaps involvement in a popular habitat program or rearing a single species. Over time, institutions often expand their butterfly work, delving into increasingly complex issues or shifting their focus to a different local butterfly priority. These new projects would not be possible without those first steps that resulted in visible successes, more knowledgeable staff, and stronger relationships with neighboring zoos and aquariums, government agencies, and local conservation organizations.

Prime examples of butterfly conservation projects that have passed through many stages of development are the programs led by the Toledo Zoo and the Oregon Zoo. Each program began with a single-species focus and has evolved to include education, habitat restoration, and research benefiting multiple species.

FROM SAVANNAS TO WETLANDS

The Toledo Zoo began breeding the federally endangered Karner blue butterfly (*Lycaeides melissa samuelis*) in captivity in 1998, in partnership with the Nature Conservancy and its Kitty Todd Preserve, the U.S. Fish and Wildlife Service (FWS), the Ohio Department of Natural Resources (ODNR), and the Michigan Department of Natural Resources (MDNR). Seven years and 1,700 released Karner blues later, the Zoo has begun a wetland butterfly initiative, hoping to duplicate the success they had with the Karner blue.

The three wetland butterfly species in the initiative include the purplish copper (*Lycaena helloides*), the swamp metalmark (*Calephelis muticum*), and the Mitchell's satyr (*Neonympha mitchelli*). None of the three has a stellar history in Ohio as Mitchell's satyr was extirpated from the state in 1958, the swamp metalmark was last seen in 1988, and the purplish copper is restricted to two (now possibly only one) sites in Northwestern Ohio. The Zoo's project has begun with the propagation of host plants, and tubs of Tussock sedge (*Carex stricta*), swamp thistles (*Cirsium muticum*), and smartweeds

(*Polygonum sp.*) adorn the Zoo's polyhouse breeding facility. The purplish copper was the first wetland butterfly propagated. From 13 eggs collected in 2003, the Zoo has now reared and released more than 3,500 coppers to three sites in the Oak Openings of Northwestern Ohio.

Preparations for the Mitchell's satyr work were more complicated due to its status as a federally listed endangered species. A surrogate species, the northern eyed brown (*Satyroides eurydice*) was used to develop an appropriate captive rearing protocol. The northern eyed brown occupies the same habitat as the Mitchell's satyr, utilizes the same host plant, and has a similar flight period. The Zoo successfully bred and over-wintered the northern eyed brown and in July 2005, the first Mitchell's satyrs and swamp metalmarks were collected from Michigan. Funding from the Institute of Museum and Library Services (IMLS) is supporting both the captive rearing of these species and the development of wetland butterfly conservation curriculum.

These projects demonstrate the value of partnerships in endangered species recovery. The powerful coalition formed to recover the Karner blue in Ohio – The Toledo Zoo, the Ohio and Michigan Departments of Natural Resources, FWS, and the Nature Conservancy – have once again coalesced, this time including the Michigan Natural Features Inventory and a myriad of new partners that make up the U.S. Fish and Wildlife Service's Mitchell's Satyr Working Group. The Detroit Zoo, John Ball Zoo, and Binder Park Zoo have also been involved in the Working Group. The partners are confident that by working together, a future for this wetland butterfly triad can be assured for generations to come.

BUTTERFLIES, PLANT GERMLASM, AND LEARNING CURVES

In 1999, the Nature Conservancy and FWS asked the Oregon Zoo to assist them in developing a population augmentation program for the Oregon silverspot butterfly (*Speyeria zerene hippolyta*), a federally threatened species confined to one population in Northern California and four in Oregon. The effort grew to include Seattle's Woodland Park Zoo and the Oregon Coast Aquarium and has resulted in 648 pupae having been returned to the field to supplement dangerously low wild populations.

The Zoo's successes with the Oregon silverspot have led to other opportunities as well. In preparation for future work with the federally endangered Fender's blue butterfly (*Icaricia icarioides fenderi*),

FWS asked the Oregon Zoo to develop captive rearing protocols and to evaluate the effects of captive rearing on a surrogate species, the Puget blue butterfly (*Icaricia icarioides blackmorei*). This work was done with funding from AZA's Conservation Endowment Fund (CEF) in 2003 and in partnership with the Washington State University. The primary threat facing the Fender's blue and its host plant, the federally threatened Kincaid's Lupine (*Lupinus sulphureus kincaidii*), is the nearly complete loss of native upland prairie habitat in the Willamette Valley. The Oregon Zoo collects and germinates the host plant seeds and transplants seedlings to an experimental "Upland Prairie" garden on the Zoo grounds, supplies seeds to conservation agencies restoring habitat, and distributes seeds to botanic repositories.

Currently the Oregon Zoo is embarking on its most ambitious project yet. The Taylor's checkerspot (*Euphydryas editha taylori*) is a species of concern and the Mardon skipper (*Polites mardon*) is a state endangered species in Washington; both are candidates for listing under the Endangered Species Act. Surveys done by the Washington Department of Fish and Wildlife (WDFW) and others have found these butterflies absent from most of their historic habitat, and in critically low population sizes where they were found. WDFW funded the Oregon Zoo to rear these species in captivity to supplement existing or extirpated populations. In the summer of 2004 the Zoo received larvae of Taylor's checkerspot, adults of the Mardon skipper, and larval host plants from WDFW to begin captive propagation efforts. Because very little is known about raising either of these species in captivity, many challenges have arisen and very few of either species survived to pupation in 2005. Lessons from last year's efforts are informing this year's work with promising results so far.

The Oregon Zoo's respected butterfly conservation program is a huge credit to the Zoo staff's ability to meet the challenges inherent in raising endangered species about which little is known and to work with partners throughout the region who share their goals. The true measure of the Zoo's success is the release of Zoo-reared butterflies back into the wild to help wild populations cling to survival while habitat restoration is addressed.

IN GOOD COMPANY

The species-focused efforts at the Toledo and Oregon Zoos are examples of just some of the collaborative butterfly conservation work being done by members of the Butterfly Conservation Initiative (BFCI) and other AZA zoos and aquariums throughout North America. After years of propagating the Karner blue butterfly's host plant for a restoration site in New Hampshire, the Roger Williams Park Zoo is now raising Karner blue larvae in-house. Zoo-raised pupae will be returned to New Hampshire's Department of Fish and Game, where the adults that emerge will be used for breeding and then released. San Diego's Wild Animal Park and the Living Desert have been in discussion with the

continued, page 16

The Butterfly Conservation Initiative (BFCI) is a coalition of 53 accredited zoos and aquariums and seven national and international conservation and scientific organizations dedicated to the conservation of imperiled North American butterflies and the habitats that sustain them. The BFCI focuses on recovery, research, and education and links non-traditional partners with the government agencies charged with implementing recovery efforts, helping to make butterfly conservation a local priority. These partnerships allow BFCI members to impact local butterfly populations and be seen by government offices as key partners in the struggle for conserving butterflies.

BFCI members are involved in a variety of on-going projects, ranging from award-winning butterfly gardens at the San Antonio Zoological Gardens and Aquarium to a daylong Nectar Collector Festival educating visitors about pollinators and celebrating a seasonal butterfly exhibit at the Western North Carolina Nature Center. Activities also include yearly monarch tagging efforts at the Oklahoma City Zoo and Botanical Garden, and an expanding "Butterfly Beltway" habitat program at the Seneca Park Zoo that currently includes butterfly gardens at 30 nursing homes and special needs facilities for children in the Rochester area. And then of course there are the educational exhibits, such as the seasonal exhibit at the Vancouver Aquarium, the daily keeper chats at the Brookfield Zoo, and the new indoor and outdoor butterfly gardens at the Bronx Zoo. The Bronx Zoo's gardens feature native butterflies and plants suitable for planting in New York area gardens and are located near a new hand-carved and hand-painted carousel that features 30 insects that children can ride and enjoy.

For information about what other BFCI members are doing, please visit: www.butterflyrecovery.org. To join the Initiative, contact Shelly Grow, Program Coordinator, at bfcia@aza.org.

Projects as Diverse as the Butterflies They Affect



BY SHELLY GROW, PETER TOLSON, DAVID SHEPHERDSON AND RUTH ALLARD

Butterflies, continued from p. 15

FWS to begin a captive rearing program for the federally endangered Quino checkerspot (*Euphydryas editha quino*) and the Birmingham Zoo hopes to work with the McGuire Center for Lepidoptera and Biodiversity on recovery efforts for the Mitchell's satyr (*Neonympha mitchelli*), hoping to learn from the Toledo Zoo along the way. Captive-raised populations of the Baltimore checkerspot (*Euphydryas phaeton*) suffered a setback at the Maryland Zoo in Baltimore and at other collaborating captive rearing facilities this year, but coordinated efforts with local butterfly enthusiasts throughout Maryland are continuing.

In addition to these propagation efforts, BFCI members are also involved in butterfly conservation at the landscape level. Twelve BFCI members have certified habitat on-grounds through state-sponsored or the National Wildlife Federation's Backyard Habitat programs. A new habitat program launched by Monarch Watch is popular among BFCI members and promotes the planting of "Monarch Waystations" along the monarch's migration corridor. At least four BFCI members are pursuing certification, including the Butterfly House, Central Florida Zoological Park, Virginia Zoological Park, and the Detroit Zoological Institute.

In Florida, Disney's Animal Kingdom, Central Florida Zoo, Brevard Zoo, Miami Metrozoo/Zoological Society of Florida, and

the Lowry Park Zoo are all working together with the McGuire Center for Lepidoptera and Biodiversity to establish transects, train volunteers, and contribute data to a statewide monitoring network. The data will be used to understand the population status of all butterflies found in Florida. The network was launched with funds from a CEF grant in 2004 and the McGuire Center has received funding from the Florida Fish and Wildlife Conservation Commission to continue the network this year. Partnership opportunities are already developing from work with the network; the McGuire Center is collaborating with the Central Florida Zoo on a new Insect Zoo, scheduled to open in October 2005.

Not all butterfly conservation projects are large, complex, and expensive endeavors; BFCI members are contributing to butterfly conservation through a variety of efforts that reflect their institution's skills and interests. Many projects begin small and go through a process of learning, expanding partnerships and program scope, and even metamorphosing into new areas altogether. Regardless of the path, all can make a significant impact on local butterfly species. To learn more about how you can get involved, visit www.butterflyrecovery.org or contact Shelly Grow at bfcf@aza.org.

Photos, Clockwise from top left corner, page 14:

1 and 2) The threatened Oregon Silver-Spot Butterfly in its native coastal habitat. • 3) (top right, page 15) An endangered checkerspot butterfly at the Oregon Zoo's Butterfly Conservation lab. • 4) Oregon Silver-Spot Butterfly • 5) A newly emerged Mardon Skipper butterfly on a flower at the Oregon Zoo's butterfly lab. • 6) *L. helloides* © Peter Tolson • 7) (bottom, left, p. 14) Mardon Skipper butterfly on a flower at the Oregon Zoo's butterfly lab.

All photos © Oregon Zoo by Michael Durham unless otherwise noted.

SHELLY GROW IS BFCI PROGRAM COORDINATOR

PETER TOLSON IS DIRECTOR OF CONSERVATION & RESEARCH
AT THE TOLEDO ZOO

DAVID SHEPHERDSON IS CONSERVATION PROGRAM SCIENTIST
AT THE OREGON ZOO

RUTH ALLARD IS AZA'S INTERIM ASSISTANT DIRECTOR
OF CONSERVATION AND SCIENCE