

XERCES SOCIETY POLICY ON BUTTERFLY RELEASES

By Robert M. Pyle, Sarina J. Jepsen, Scott Hoffman Black and Mia Monroe

The transfer and release of butterflies for weddings, classroom activities, and other events may cause several problems from a conservation standpoint. By way of definition, this policy refers to the purposeful removal of butterflies from their point of origin or from a captive-bred source, transfer to another place, and release into the wild. It is impossible to know the size of the butterfly rearing industry or the total number of butterflies released each year, but an estimate in a New York Times editorial in 2006 suggested that there are approximately 45 butterfly farms in the U.S. that distribute 11 million butterflies per year,¹ most of which are monarchs and painted ladies. To put that number in perspective, the entire US West Coast overwintering monarch populations probably total less than 500,000.² While USDA permits are required to ship butterflies between states and they do not allow permits to be issued for shipment across the Continental Divide, these permits do not track the number of butterflies that are transported, nor do they require that the butterflies be free of diseases.

In order to conserve butterflies and properly manage their habitats, it is necessary to understand their natural distribution, breeding locations, and movements, unmediated by human intervention. Many human activities affect butterfly occurrence. But the direct transfer and release of individuals, by its very nature, perturbs our ability to understand the biogeography of butterflies, and therefore to determine their conservation needs. This is not theoretical: every time a butterfly is transferred, it holds the potential to alter our sense of that species' normal occurrence. This is particularly antithetical to monarch studies, where our understanding of the migration and overwintering (especially in the West) is far from clear and easily subverted by releases for weddings and other purposes. Whether or not releases take place in the recorded range of a given species is immaterial: releases mislead our mapping of the dynamic condition of a species' natural distribution by introducing false occurrence data, whether within its native range or not. This is especially critical for climate change studies, which depend on measuring the responses of organisms to changing temperatures, rainfall, and so on. Releases blur these patterns.

Butterfly releases may present problems through the transfer of disease from wild habitats, laboratories, or industrial breeding facilities to other colonies, where die-off may result or diseases may just weaken wild populations and make them more susceptible to

¹ Lockwood, J.A. August 24, 2006. *Butterfly Kiss-Off*. Editorial in the New York Times. Accessible online: http://www.nytimes.com/2006/08/24/opinion/24lockwood.html?_r=2&partner=rssnyt&emc=rss

² Personal Communication with Dennis Frey, 9/29/2009; See also: Frey, D., S. Stevens, and M. Monroe. 2008. Western Monarch Thanksgiving Count Data 1997-2008. Available online: <http://www.xerces.org/wp-content/uploads/2009/09/western-monarch-thx-counts1997-2008.pdf>

other stressors.³ In the past, laboratory populations of monarchs have been devastated by protozoan parasites.⁴

Although there has been no research on the impact of butterfly releases on the health of wild butterfly populations, researchers have shown that commercially reared bumble bees harbor substantially higher pathogen loads than nearby wild bumble bees, and that these diseases and parasites are transferred to wild populations at flowers where bumble bees collect nectar and pollen^{5,6}. Four North American bumble bee species are on the brink of extinction; the most likely cause of their decline is disease from commercially reared bumble bees.⁷ Salmon provide another notable example of disease spreading from commercially produced to wild animals. In the recent past, biologists and conservationists warned about the spread of sea lice from commercially reared salmon to wild populations. These concerns were widely ignored; conservationists were told that this claim was speculative and that there was no evidence that these pathogens would spread from farmed salmon to wild salmon. In 2001, a sea lice epidemic wreaked havoc on wild salmon in the Broughton Archipelago, British Columbia and local pink salmon runs declined by 95%.⁸

Monarch butterfly breeders have experienced problems with pathogens,⁹ and there are no regulations that prevent rearing companies from mailing unhealthy butterflies to customers. Pathogens are often difficult to detect, and insects that appear healthy may carry pathogens. It is reasonable to assume that commercially reared butterflies can harbor pathogens that can easily spread to wild butterflies; the impact of this practice is unstudied and unknown.

Western monarch populations have been steadily declining: annual Thanksgiving counts of overwintering monarch clusters in California demonstrate a nearly 90% decline over the past decade. Overwintering sites counted in 1997 totaled over 1 million butterflies, whereas only about 132,000 monarchs were counted in 2008 (the average number of

³See also: Brower, L.P., L.S. Fink, A. Van Zandt Brower, K. Leong, K. Oberhauser, S. Altizer, O. Taylor, D. Vickerman, W.H. Calvert, T. Van Hook, A. Alonso-Mejia, S.B. Malcolm, D.F. Owen, and M.P.Zalucki. 1995. On the dangers of interpopulational transfers of monarch butterflies. *Bioscience* 45(8) 540-544.

⁴ Federman, A. September 2008. All Aflutter: The flap over the mail order butterfly industry. *Earth Island Journal*. Copyright Earth Island Institute. Available online: http://www.earthisland.org/journal/index.php/eij/article/all_aflutter/

⁵ Colla, S. R., M. C. Otterstatter, R. J. Gegear, and J. D. Thomson. 2006. Plight of the bumblebee: pathogen spillover from commercial to wild populations. *Biological Conservation* 129: 461-467.

⁶ Otterstatter, M. C., and J. D. Thomson. 2008 Does pathogen spillover from commercially reared bumble bees threaten wild pollinators? *PLoS ONE* 3. Available online: <http://www.plosone.org/doi/pone.0002771>

⁷ Evans, E., R. Thorp, S. Jepsen, and S. Hoffman Black. 2008. Status review of three formerly common species of bumble bee in the subgenus *Bombus*. The Xerces Society. 63 pp. Available online: http://www.xerces.org/wp-content/uploads/2009/03/xerces_2008_bombus_status_review.pdf

⁸ Federman, A. Autumn 2009. Plight of the Bumble Bee. *Earth Island Journal*. Copyright Earth Island Institute. Available online: http://www.earthisland.org/journal/index.php/eij/article/plight_of_the_bumblebee/

⁹ Federman, A. September 2008. All Aflutter: The flap over the mail order butterfly industry. *Earth Island Journal*. Copyright Earth Island Institute. Available online: http://www.earthisland.org/journal/index.php/eij/article/all_aflutter/

monarchs per site decreased from 12,232 in 1997 to 1,146 in 2008).¹⁰ While most researchers suggest that loss of milkweed (from drought, agricultural and urban development, and herbicides) and loss of overwintering habitat are the most likely factors for this decline, it is unknown what role disease may be playing in the dramatic decline of the western monarchs.

Another threat of butterfly releases involves introducing unhelpful genes into local populations, which could negatively influence the survivorship potential of native butterflies. Genetic transfer can occur when released butterflies mate with wild butterflies and they produce offspring; the genetic make up of the offspring will consist of traits from both the wild and reared butterfly parents. Though this threat is difficult to quantify and demonstrate, it should certainly be approached through the precautionary principle, with the burden of proof on potential releasers to prove the harmlessness of their proposed activity.

Treating butterflies as commercial ornaments to be grown, shipped, and released at will may not be the most appropriate way to regard our Lepidoptera or to increase respect and care for wild butterflies. Releases often result in mortality for the insects involved due to adverse weather conditions, an absence of nectar sources, or other dangers. If they do succeed in reproducing in the new territory, the above problems are only magnified. Birds have been protected from such treatment for decades, and it is time to extend the same kind of concern for the natural range and movement of butterflies.

In view of the above factors, the Xerces Society has adopted the following policy:

No butterflies should be released into the wild beyond the county of their natural origin, or in the case of bred butterflies, the county of origin of the breeding stock (or an equivalent area, in parts of Canada without counties). Any releases that do take place should be clearly marked for easy determination as such. Xerces recognizes that there may be legitimate conservation reasons for transfers, such as reintroduction of rare species to restored habitats. But these instances will be rare and should be carefully considered, permitted, documented, advertised, and recorded. Teachers are encouraged to use butterflies netted or reared from local habitats for educational purposes. The Xerces Society does not condone the practice of harvesting numerous monarchs from their overwintering sites. In the event that institutions choose to acquire commercially reared butterflies for educational purposes, The Xerces Society recommends that they not be released into the wild after adults emerge unless they originated locally. Instead of releasing into the wild, they can be studied and enjoyed in captivity, as they are in butterfly houses.

The following individuals support the Xerces Society policy on butterfly releases:

Sonia Altizer, Ph.D.

Associate Professor, Odum School of Ecology
University of Georgia

¹⁰ Frey, D., S. Stevens, and M. Monroe. 2008. Western Monarch Thanksgiving Count Data 1997-2007. Accessible online: http://www.xerces.org/wp-content/uploads/2008/10/thanksgiving_count_data_07.pdf

Athens, GA

Lincoln Brower, Ph.D.

Research Professor, Department of Biology
Sweet Briar College
Sweet Briar, VA

Peter Brussard, Ph.D.

Professor, Department of Biology
University of Nevada, Reno

Jaret Daniels, Ph.D.

Assistant Professor, Department of Entomology and Nematology
University of Florida
Gainesville, FL

Dennis Frey, Ph.D.

Emeritus Professor, Cal Poly State University
San Luis Obispo, CA

Crispin S. Guppy, M.Sc., R.P.Bio.

Consulting Biologist and Land Use Planner
Quesnel, BC

Dennis Murphy, Ph.D.

Research Professor, Department of Biology
University of Nevada, Reno
Reno, NV

Paul Opler, Ph.D.

Professor, Department of Bioagricultural Sciences and Pest Management
Colorado State University
Fort Collins, CO

Jon Pelham

Curatorial Associate of Lepidoptera
Burke Museum of Natural History and Culture
Seattle, WA