

Migratory Dragonfly Partnership

Using research, citizen science, education, and outreach to understand North American dragonfly migration and promote conservation



The Common Green Darner (*Anax junius*) is one of North America's best known migratory dragonflies, but there are still many unanswered questions about its annual movements. © John C. Abbott/Abbott Nature Photography.

Dragonfly migrations have been observed on every continent except Antarctica, with some species performing spectacular long-distance mass movements. The Wandering Glider is the global insect long-distance champion, making flights across the Indian Ocean that are twice the distance of Monarch Butterfly migrations. In North America, dragonfly migrations are seen annually in late summer and early fall, when thousands to millions of these insects move from Canada down to Mexico and the West Indies, passing along both coasts of the United States and through the Midwest. Fall dragonfly migrations are often observed in conjunction with annual bird migrations, but

they can be sporadic and discontinuous, with large numbers moving in mass flights for a few days followed by gaps with few to no migrants. North America may have as many as eighteen migratory dragonfly species; some engage in annual seasonal migrations, and others are more sporadic migrants. About sixteen dragonfly species in North America are considered regular migrants, including the Common Green Darner (*Anax junius*), Wandering Glider (*Pantala flavescens*), Spot-Winged Glider (*Pantala hymenaea*), Band-Winged Dragonlet (*Erythro-diplax umbrata*), and several species of Meadowhawk (*Sympetrum*) and Saddlebags (*Tramea*).

Why Dragonflies and Their Migration are Important

Dragonflies and damselflies are of great ecological importance. The aquatic nymphs and winged adults create an important link between aquatic and terrestrial ecosystems, and they play a central role in the food web

of aquatic systems. Both nymphs and adults are voracious predators. As adults, they may consume up to 15 percent of their own body weight in prey each day, including pest species such as mosquitoes and biting flies. In



The Migratory Dragonfly Partnership steering committee members represent a range of organizations, including:

Ontario Ministry of Natural Resources
Peggy Notebaert Nature Museum
Pronatura Veracruz
Rutgers University
Slater Museum of Natural History,
University of Puget Sound
Smithsonian Conservation Biology
Institute
St. Edward's University
U.S. Forest Service International
Programs
U.S. Geological Survey
Vermont Center for Ecostudies
The Xerces Society for Invertebrate
Conservation

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turn, they provide a food source for a variety of other wildlife. The nymphs are an important food source for water birds and fish, and adult dragonflies and damselflies are eaten by many kinds of birds. Migrating hawks often feed on dragonflies during their journey.

Dragonflies and damselflies are also part of a suite of insects that can be used to understand the health of aquatic ecosystems. They are excellent tools for monitoring the current biological condition of wetlands, and for predicting future changes in those environments.

Despite the fact that it spans three countries (Canada, United States, and Mexico) and has been documented since the 1880s, North American dragonfly migration is a poorly understood phenomenon. Knowledge about migratory cues, flight pathways, and the southern limits of overwintering grounds is still seriously lacking. This knowledge gap prevents development of international management plans and coordinated conservation actions to sustain and protect the migration. None of the dragonfly species known to be migrants in North America is currently endangered, but identifying the habitats on which migrating dragonflies rely for their transcontinental flights may help us better protect these important systems. Threats to wetland habitats, including pollu-

tion, urbanization, and global climate change, could alter environmental cues for migration, affect development and adult emergence times, disrupt migratory corridors, or render overwintering habitat unsuitable.



The Wandering Glider (*Pantala flavescens*) migrates along the East Coast of North America. © Greg W. Lasley Nature Photography.

The Migratory Dragonfly Partnership

The Migratory Dragonfly Partnership (MDP) is a collaboration formed in 2011 among scientists, nongovernmental organizations, academic institutions, and federal agencies from across North America to better understand the greatly understudied phenomenon of North American dragonfly migration. The MDP steering committee is chaired by Scott Hoffman Black (Xerces Society for Invertebrate Conservation) and vice-chaired by John Abbott (St. Edward's University). Goals of the MDP are two-fold: to combine research, citizen science, and education and outreach to better understand North America's migrating dragonflies; and to promote conservation of the vulnerable wetland habitats on which they rely.

MDP is using research, citizen science, and education and outreach to engage nature centers, parks, wildlife refuges, and the general public in education and field activities to monitor the five main migratory dragonfly species in North America during their fall and spring flights, and at local ponds throughout the year. Our educational events and materials also highlight the importance of conserving both wetland habitats and vulnerable dragonfly species. We have built an international network of volunteers in Canada, the US, and Mexico, and are partnering with groups with similar interests such as Pronatura Veracruz, Hawk Migration Association of North America, Master Naturalist organizations, and Friend groups of wildlife refuges.

Dragonfly experts on the MDP steering committee are assisting staff of partner organizations in Mexico, where migrating dragonflies are often seen in conjunction with bird migrations, to monitor dragonfly migration and conduct outreach about dragonflies and migration in local communities. Outreach and monitoring materials as well as portions of the web site are available in English and Spanish to facilitate greater participation.

Migratory Dragonfly Partnership members will work to assess the distance traveled by dragonflies in a migrating swarm, determine how far an individual has traveled from the habitat in which it developed and emerged as a nymph, and investigate patterns of reproduction, emergence, and movement among migrants along their flight paths.

Regular monitoring and centralized reporting among participants across three nations will help us answer some of the many questions currently surrounding dragonfly migration and provide information needed to create cross-border conservation programs to protect and sustain this phenomenon. This partnership will also facilitate identification of changes in species' ranges, increase public awareness of the importance of odonates, and enable additional conservation attention to be focused on vulnerable aquatic habitats and the many dragonfly and damselfly species that rely on these places across North America.