DRAGONFLY SOCIETY OF THE AMERICAS

ARGIA

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The **Dragonfly Society of the Americas** (DSA) advances the discovery, conservation, and knowledge of Odonata through observation, collection, research, publication, and education.

Membership is open to any person in any country. Member benefits include digital subscriptions to *ARGIA* and the *Bulletin of American Odonatology*, voting rights, membership rates for attending meetings, and access to our full publication archives. (We do not distribute print editions of our publications.) Dues for individuals or institutions are as follows (in $US):

Basic Membership
$15 annually

Sustaining Membership
$20 annually

Life Membership
$300 single payment

Sustaining Life Membership
$400

Annual memberships span a calendar year. Dues can be paid online at our website: www.dragonflysocietyamericas.org. To pay by check or money order contact the DSA treasurer at treasurer@dragonflysocietyamericas.com.

Events Calendar

To include your event here in *ARGIA* or on the DSA website, please send information to our editor (editor@dragonflysocietyamericas.org) and to the webmaster (webmaster@dragonflysocietyamericas.org).

Odolympics | Odolimpiadas
16–23 July 2022
Keep your eyes on our website for updates on how to participate in the 2022 Odolympics. (en español)

Workshop | Dragonfly Biodiversity: From the Field to the Lab
16–20 June 2022
National Natural Park Tatamá, Colombia

2022 DSA Annual Meeting
21–24 June 2022
National Natural Park Tatamá, Colombia
Click here for more information

For updates on events visit the "Meetings" page on the DSA website.

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The Vocal Representatives include the DSA Executive Council along with other non-voting representatives and constitutes the DSA leadership, some of whose members serve indefinitely and others on staggered terms.

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Cover: Wandering Glider (*Pantala flavescens*); 12 May 2019; Chandler, Maricopa, Arizona; photograph by Pierre Deviche.

Left: Common Whitetail (*Plathemis lydia*); 2 September 2021; Elkridge, Maryland; photograph by Sean C. Maloney.

Nymph Cove: Backyard Pond Construction

By Marla C Garrison and Ken J Tennessen

Are you struggling to get away to see dragonflies? How about having them come see you, instead? If you aren't lucky enough to live beside a lake, stream, or other wetland or waterway, but you do have a backyard, why not construct an aquatic Airbnb for odonates? It may sound like that worn out teaser, but in the case of dragonflies and damselflies "if you build it, they will come." Even very small artificial ponds can serve as breeding habitat for certain species. Just ask Edgar Spalding, who lives in Middleton, Wisconsin; he built a pond with a diameter of only six feet and has had *Archilestes grandis* (Great Spreadwing) completing its life cycle every year for multiple years. This installment discusses pond construction and a few of the species of Odonata that have been attracted to homemade ponds.

Figure 1. Holes for pond dug three feet deep.

Figure 2. Pond liner in place and filling.

The size and type of aquatic habitat you decide to build will depend, in part, on the character and dimensions of your property, while the required labor depends largely on its soil type.

Clay soils tend to hold water for long periods. Soils that are predominantly sand and gravel allow water to percolate quickly, making a pond liner necessary. The type of soil will also dictate the ease at which you can dig the hole — sand makes for easy digging with a hand shovel whereas clay and gravel are much more labor intensive and may require mechanized tools.

Once you have decided to take the plunge to build a pond, first determine its location, size, and shape. Next, outline the pond on the ground and then start digging (Fig. 1). A depth of three feet or more is recommended in northern areas where freezing occurs; during very cold weather, this depth will help protect both nymphs and the roots of your aquatic plants, such as water lilies, from freezing. As shown in Figure 1, the edges can be contoured. You may also want to create 'shelves' of varying depths, some less than a foot, for placing potted aquatic plants that thrive in shallow water (e.g., rushes, sedges, arrowhead, blue flag iris).

As mentioned, if you have a sand/gravel base, you will need a pond liner. Liners can be purchased in home improvement stores or online; we recommend RPE (reinforced polyethylene) with a thickness of 45 mil (1 mil = 1/1000 inch). Before putting down the liner, make sure the bottom surface is smooth and free of any sharp stones or sticks. To ensure the liner won't get punctured, consider purchasing an underlayment. Lay down the liner with as few folds as possible, although some folding is unavoidable. The edges of the liner can be held in place with a few rocks to

Figure 3. Pond completed.

facilitate filling (Fig. 2). Once filled, more rocks are needed to complete the border around the pond (Fig. 3).

With time, small ponds tend to become overgrown with aquatic vegetation. As a result, the water will become oxygen starved as plant matter and other organic debris fall to the bottom and decay. We recommend adding an aeration system such as an electric pump with a filter to recirculate the water. The flexible tubing leading from the pump can be situated to empty onto splash rocks piled up at a convenient spot at the pond edge. If a splash zone is planned, make sure to extend the pond liner where rocks will be placed to avoid losing water. See Figures 2 and 4. Removing excess vegetation and leaves that fall into the pond every year will help reduce the buildup of organics. Heavy algal blooms can occur; we recommend hand removal of algae, a tedious, messy task, but it avoids use of chemicals.

Adding aquatic plants and small water-soaked logs not only beautifies and naturalizes your water feature, it provides places for endophytic odonates to lay eggs. It also provides habitat for small aquatic animals that are prey for odonates. Some plants that thrive in constructed ponds include rushes (*Scirpus*, *Juncus*, *Eleocharis*), sedges (*Carex*), arrowhead or duck potato (*Sagittaria*), blue flag (*Iris versicolor*), water lily (*Nymphea odorata*), and pondweed (*Potamogeton*). Adding a variety of plants increases your chance of attracting a variety of odonates. It is best to acquire plants locally, as the cultivars

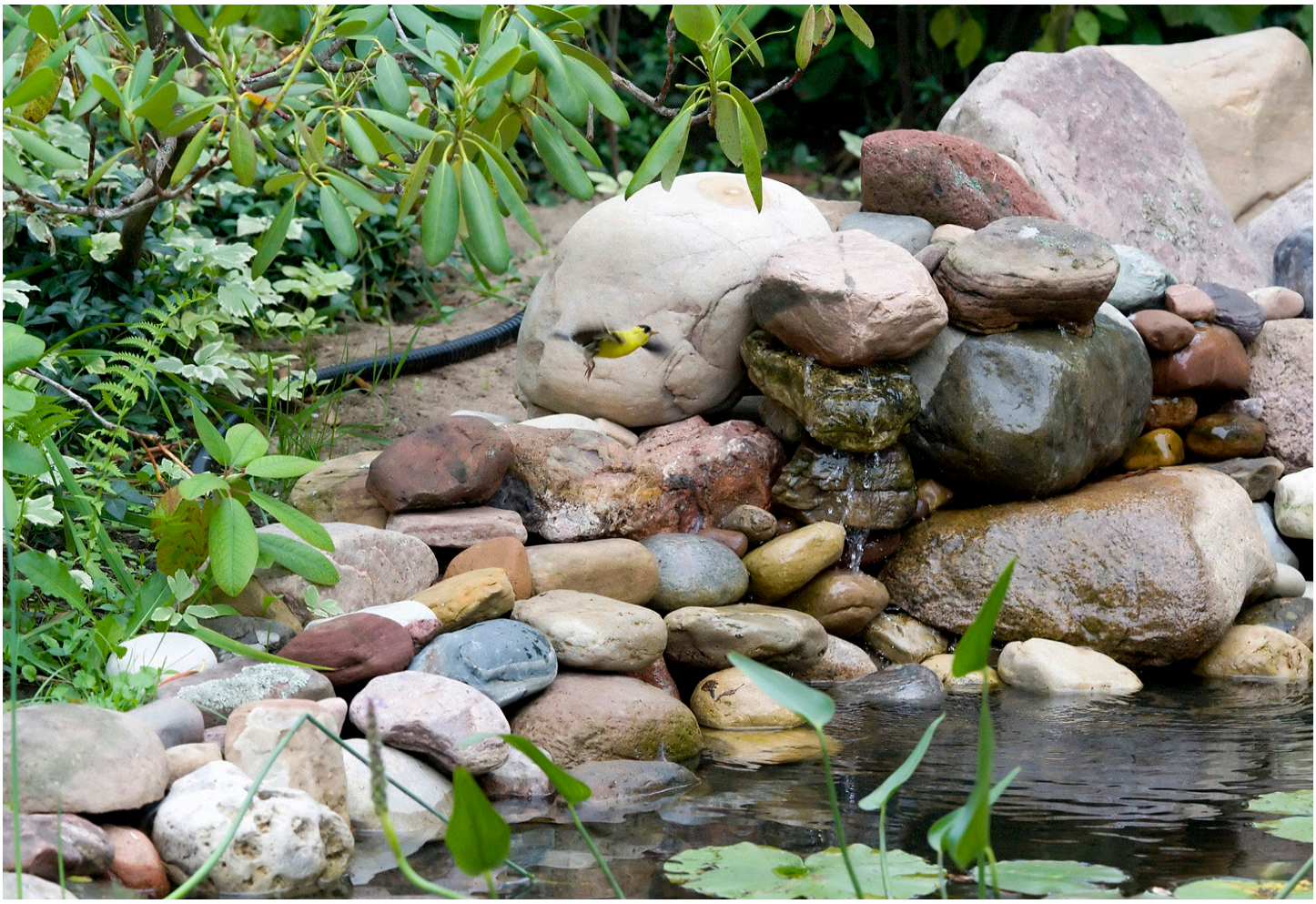

Figure 4. Water trickling back into pond.

are adapted to your climate conditions. Placing the roots of the plants in special aquatic pots containing garden soil (available at home improvement stores) and weighing them down with stones is a good way to get them to establish. To provide the best habitat for Odonata, do not stock any kind of fish in your pond. Fish not only eat dragonfly eggs and nymphs, they foul the water; better to add some snails from a local pond or lake. Seventeen species of Odonata have been spotted around the pond featured in the accompanying figures (this is Ken's pond, in central Wisconsin, measuring approximately 8' × 13'), and eight species have been seen laying eggs in it and/or been found as nymphs (mainly *Anax junius* [Common Green Darner], *Libellula pulchella* [Twelve-spotted Skimmer], *Pantala flavescens* [Wandering Glider], *Ischnura verticalis* [Eastern Forktail]). Ryan Brady, who lives in northern Wisconsin, owns a substantial property lacking natural ponds but located near wetlands; before he built two large ponds he had recorded 19 species of Odonata. Within one year after the new ponds were filled he recorded 40 additional species! It appears that the larger the pond, the more species come to visit.

A recent issue of a popular nature magazine stated that adding a pond or other water feature to your yard or garden is one of the most important things you can do to provide habitat for birds and other wildlife. Locating your pond near small trees, and adding bushes, forbs, and grasses, provides cover and perch sites for dragonflies; it also attracts other forms of wildlife, including birds and frogs. Last fall, migrating yellow-rumped warblers and cedar waxwings appeared to be having a wild party flitting around the rocks where the water trickled into Ken's pond; in 2020, a particularly wet year in Wisconsin, green frogs practically overran the place.

Figure 5. Water lily in bloom.

Be mindful that making a pond requires a fair amount of expense and work, and maintaining the pond in good condition requires some additional labor on a yearly basis. We believe, however, that the work involved rewards more than it costs.

An additional concern regarding care and maintenance is how to protect the odonate nymphs that call your pond home when you occasionally have to 'deep clean' it? Jennifer, a Nymph Cove reader from Berkeley California, writes:

> *"I have an outdoor fish pond. I enjoy seeing dragonflies above my pond. I am wondering when the optimal time to clean the pond would be in order not to kill any nymphs that may be at the bottom of the pond?"*

Jennifer: cleaning your pond is best done early in the year, before the first dragonflies and damselflies begin to lay eggs. We recommend pumping most of the water out and then checking the bottom debris as you remove it to see if there are any nymphs present. Put the nymphs in an aquarium until you refill your pond with fresh water. You probably will not have to 'clean' the pond every year, but that will depend on how much material (leaves, grass clippings, etc.) fall into your pond through the seasons. Putting a net over the pond in winter will help keep blowing debris from getting into the pond. Also, reducing the number of fish will lower the amount of organic pollution. Organic matter is the leading contributor of oxygen depletion and algal growth.

As a final note, for those days when you want to relax in your backyard, you can just walk out the door in your shorts and slippers, sit by your trickling pond, and experience nature. All you need is a comfortable chair and your favorite beverage to help enjoy the show. Watch dragonflies interact, feed, mate, and lay eggs; and you'll have ready access to nymph studies! Maybe you better keep a camera and/or binoculars handy to make it a complete success. We would love to hear stories about your pond construction and the species it attracts.

Marla Garrison is a faculty member in the Department of Biology at McHenry County College, Crystal Lake, Illinois. She is author of Damselflies of Chicagoland *published online by Chicago's Field Museum https://fieldguides.fieldmuseum.org/guides/guide/388. She may be contacted via email at mgarrison@mchenry.edu or by phone (815)479-7627.*

Ken Tennessen has published over 80 technical papers on Odonata. His recent book, Dragonflies Nymphs of North America, *was published by Springer in 2019.*

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and

Bulletin of American Odonatology

Call for Submissions

The DSA welcomes proposals for articles on most any topic related to Odonata for our quarterly news journal, *ARGIA*, or our occasional peer-reviewed journal, *Bulletin of American Odonatology* (BAO). Topics should be generally consistent with the DSA mission.

Inquires about *ARGIA* proposals should be directed to its editor, Amanda Whispell, at editor@dragonflysocietyamericas.org. For *BAO* proposals, contact Bee Smith at editorbao@dragonflysocietyamericas.org.

Authors preparing articles should consult our Submissions Guidelines and include a completed Submission Form when submitting your articles; both are available on the DSA website: www.dragonflysocietyamericas.org/instructions-to-authors.

Back cover:

Slaty Skimmer (*Libellula incesta*)
20 July 2021
Kenilworth Aquatic Gardens, District of Columbia

Photograph by:

Sean C. Maloney

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