

## Great Blue Herons, Dwarf Wedge Mussels, and Gray Petaltails

The 1,900 acre Nanjemoy Creek Great Blue Heron Sanctuary in Charles County, Maryland boasts the largest concentration of nesting Great Blue Herons on the east coast of the United States. The Nature Conservancy acquired the rookery in 1978 and continues to be active in purchasing adjacent areas necessary for sustaining the large wading birds.

I have no idea of the intelligence of a GBH (as Great Blue Herons are affectionately called by the local birding enthusiasts), but these gangly (or graceful depending on what they are doing) birds sure know how to pick a nice home. Around Valentine's day, 1200+ nesting pairs of love-sick herons return to Nanjemoy to share the sanctuary with fox, mink, otter, beaver and other numerous native plant and animal species. As would be expected of a sanctuary of this quality and size, an impressive number of endangered or threatened plants and animals also reside within its boundaries.

The sanctuary covers a multitude of different animal and plant communities from brackish tidal wetlands to upland forest. But for me the heart of the prize is the upland tributaries and main stream of Nanjemoy Creek before it mixes with the brackish water of the Potomac River. This pristine stream transverses through hilly, deeply-shaded forests of mixed hardwoods where it is fed by small tributaries and fresh water seeps. The creek and its tributaries range from gravel-riffles to silt-bottom beaver ponds. On one occasion Nanjemoy Creek meanders through a typical coastal floodplain surrounded by oxbow ponds of various sizes and ages.

This select portion of Nanjemoy Creek is also home to the federally listed Dwarf Wedge Mussel (*Alasmidonata heterodon*). It also maintains the highest concentration of the Carolina Satyr (a southern species of butterfly) in Maryland and is home to a number of state listed plants such as the Virginia heartleaf (*Hexastylis virginicum*), Twisted Spikerush (*Eleocharis tortillis*), and the Delicate Sedge (*Carex leptalea*). Because of the sensitive habitat and the impact visitors would have on the nesting herons the preserve is only open to scientific research or special guided trips by the Maryland Nature Conservancy.

So when I was approached by the state of Maryland and asked if I would be interested in "Surveying the Upper Nanjemoy Creek Watershed for Odonates", I answered in as calm of a voice as I could muster -- YES OF COURSE -- ABSOLUTELY YES -- WHEN CAN I START.

Armed with a Maryland Natural Resource Permit, binoculars, insect net, and an assortment of field gear, I shared upper Nanjemoy Creek with the Great Blue Herons, Dwarf Wedge Mussels, and my favorite "bugs" from April, 1994 to April of 1995.

I focused on three kilometers of Nanjemoy Creek and Beaverdam Creek (a major tributary) between Hancock Run road and Route 6. I tried to visit all of the various wetland habitats that existed along the stream corridor. These basically included the stream proper, swamps, oxbow ponds, and seepage springs.

During mid-April, 1994 on my first visit, I had no more than parked my car along Hancock Run Road next to Beaverdam Creek, when I was immediately inundated (even before I could get the net out of the back of the car) with numerous dragonflies hawking over the road. What a wonderful way to start a dragonfly season with *Gomphaeschna furcillata* and *Epithea spinosa* in healthy numbers within arms reach. It also did not take long to discover that both *Helocordulia selysi* and *H. uhleri* were patrolling small portions of the nearby Beaverdam Creek. It was obvious to me that the upcoming year was going to be productive.

I visited Nanjemoy 6 more times before the permit expired. These excursions resulted in identifying forty-eight (48) species of dragonflies and damselflies. Both the adult and larval habitats were sampled. The following is the complete list of odonates observed in the 3 km corridor of Upper Nanjemoy Creek and Beaverdam Creek: PETALURIDAE -- *Tachopteryx thoreyi*; GOMPHIDAE -- *Gomphus exilis*, *G. lividus*, *Hagenius brevistylus*, *Stylogomphus albistylus*; AESHNIDAE -- *Anax junius*, *Basiaeschna janata*, *Boyeria vinosa*, *Epiaeschna heros*, *Gomphaeschna furcillata*, *Nasiaeschna pentacantha*; CORDULEGASTRIDAE -- *Cordulegaster maculata*; MACROMIIDAE -- *Didymops transversa*, *Macromia illinoiensis georgina*; CORDULIIDAE -- *Epithea cynosura*, *E. princeps*, *E. spinosa*, *Helocordulia selysi*, *H. uhleri*, *Somatochlora linearis*, *S. tenebrosa*; LIBELLULIDAE -- *Erythemis simplicicollis*, *Libellula cyanea*, *L. incesta*, *L. luctuosa*, *L. lydia*, *L. needhami*, *L. semifasciata*, *L. vibrans*, *Pachydiplax longipennis*, *Pantala flavescens*, *P. hymenea*, *Sympetrum vicinum*, *Tramea carolina*, *T. lacerata*; CALOPTERYGIDAE -- *Calopteryx maculata*; LESTIDAE -- *Lestes disjunctus australis*; COENAGRIONIDAE -- *Argia fumipennis violacea*, *A. tibialis*, *Chromagrion conditum*, *Enallagma civile*, *E. divagans*, *E. durum*, *E. exulans*, *E. signatum*, *Ischnura hastata*, *I. posita*, *I. ramburi*, and *I. verticalis*.

Of these *Libellula needhami*, *Enallagma durum*, and *Ischnura ramburi* were probably strays from downstream Nanjemoy Creek where it becomes wider and mixes with brackish water from the Potomac River. These species are very common downstream but only a few were sighted upstream. It is unlikely that their larvae reside in the surveyed area. However, the migratory species, *Anax junius* and the two species of *Pantala* and *Tramea*, were all observed ovipositing in the oxbow pools and probably do maintain larvae populations along the corridor of upper Nanjemoy Creek.

On May 31, 1995 I was lucky enough to witness one of the most spectacular gomphid emergences that I had ever seen. Nanjemoy Creek was alive with teneral *Stylogomphus albistylus*. These tiny gomphids were fairy-like in their teneral state. Their transparent wings and bodies glistened whenever they touched sunlight. One spot along the stream was truly magical. At this unique location a single narrow shaft of intense sunlight broke through the otherwise deeply shaded stream, creating a white spot in a dark forest. The emerging dragonflies making their maiden flight towards the protection of the forest would pass through this column of sunlight. The illusion was created that the black stream was spontaneously producing dozens of tiny, ephemeral, tinker-bell like apparitions that would exist for only a second or two before disappearing as quickly as they were created.

If *Stylogomphus albistylus* were the fairies of Nanjemoy Creek then *Tachopteryx thoreyi* were the dragons. Although few in number, the large size and distinctive behavior placed the Gray

Petaltails into a class by themselves. These conspicuous giants stayed along the open sunlit portions of the stream which were close to their larval seeps. Feeding and chasing each other, and resting vertically on tree trunks occupied most of their time. *Stylogomphus albistylus* avoided the open areas where the petaltails were residing so they never appeared in be in danger of being eaten by their larger relatives.

However, crane flies did not have it so lucky. They were often snatched in mid air by hungry *T. thoreyi* and carried to sunlit perches to be devoured. One particularly voracious Gray Petaltail was often seen eating crane flies on a branch directly above an eddy at the stream's edge. Beneath the Nanjemoy dragon, spinning slowly in lifeless circles on the water's surface were the numerous, thin, black legs of previously devoured crane flies.

Nanjemoy Creek Great Blue Heron Sanctuary was, and is, a wonderful place to do science. Magical places always are.