GLASSWORMS: A LIVE OR FROZEN TREAT FOR EVEN THE MOST FINICKY FISH

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My first encounter with Glassworms aka Phantom Midge Larvae (*Chaoborous* spp.) was in the 1970s working in a tropical fish store (Schmidt 1984). These bizarre one-half-inch insects are plankton and completely transparent. Under a microscope, fore and aft air bladders are visible and serve dual roles: maintaining equilibrium and neutral buoyancy to suspend larvae throughout the water column. In the tail region, there is a structure that looks very much like a fin (with rays) and functions as a rudder. The head contains large, conspicuous eyes and massive mouth parts which are used to catch and eat their common prey Daphnia. Glassworms move erratically through the water by contorting and flexing their bodies and can for short periods evade fish intent on making meals out of them.

There are more than one species of Glassworms. Some live in lakes, but during the day burrow into the soft sediments in the deepest part of lakes where they are safe from fish feeding on plankton. At night they emerge and stratify at about 20 feet, where their Daphnia prey also concentrate.

Photos by the author unless otherwise indicated.

I was on one attempt to collect these Glassworms using a trawl. On the old paper graph depth finder just after sunset, the black bottom turned a gray and appeared to rise. Just before the reaching the surface at what we assumed was the lower end of the thermocline, the band narrowed and turned black again. We deployed the trawl, but constantly and haphazardly zigzagged up and down through the narrow layer. Around midnight, we did get "pulled over" by sheriff deputies with the Washington County Water Patrol. We thought we had "some explaining" to do, but all they were interested in was our life jackets. After a few hours of effort we had a couple of gallons of Glassworms. Most of these were frozen, but I brought some home alive. These were slightly smaller than pond Glassworms. What amazed me was the speed at which this species headed straight for the bottom of the aquarium. None of the fish were fast enough to catch them, but I thought the crushed dolomite gravel would be too hard to burrow into. However, like little crowbars these dynamos augered into the substrate never to be seen again.

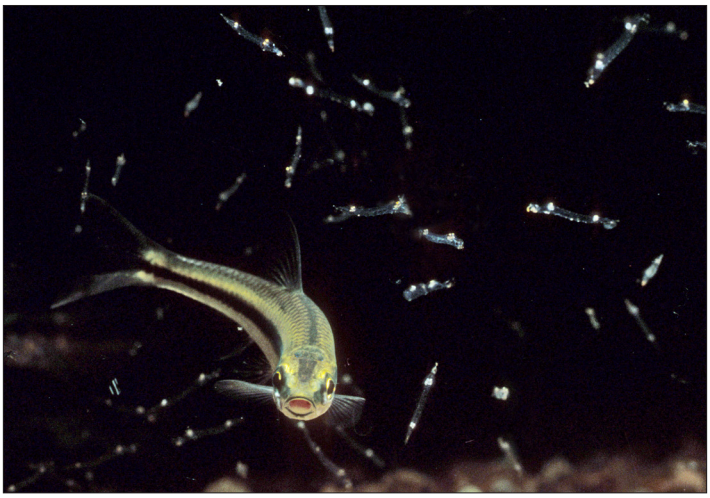
Glassworms that are the best as live food inhabit fishless ponds year-round, but like fruit and vegetables are seasonal

Photo by Jan Hamrský

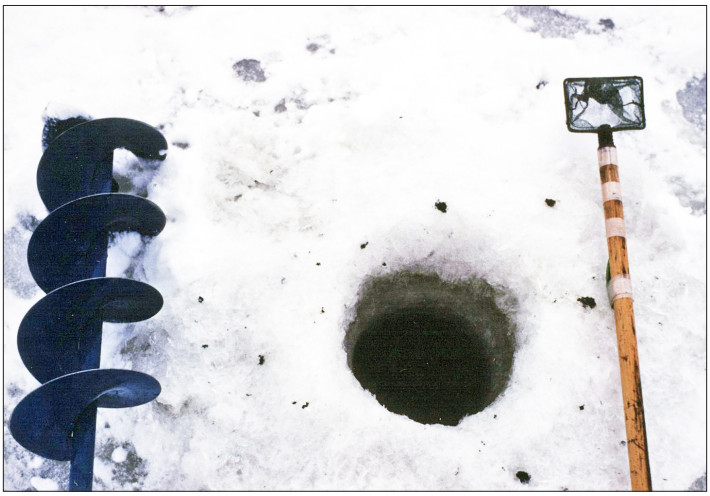
and best collected from late September to mid April. The colder water temperatures instills "bullet-proof" characteristics allowing Glassworms to survive days shipped across the country without adding water, freezing solid for short periods, and immune to chlorine in tap water. As a live food, they remain available for days or weeks to fish feeding at the surface, mid-water, and bottom. Besides fish with finicky tastes, hobbyists rave about Glassworms as a conditioning diet to promote breeding. This is the food of choice for NANFA Fellow Ray Katula, who has bred countless natives in aquariums. Tropical fish breeders use Glassworms to shorten the time and increase egg production between spawns. Even marine fish can't resist, but increased buoyancy from salinity concentrates Glassworms near the surface and must be fed sparingly because they will not live long in saltwater. The results of a San Francisco Bay Brand, Inc. nutrition analysis of frozen Glassworms was Crude Protein Min 5.40%, Crude Fiber Max 1.00%, Moisture Max 93.00%, and Dry Protein 77%.

As the water warms in the spring, pupae begin to appear. This stage orientates vertically instead of horizontally and develops two "devil horns." They are still an excellent live food, but in a short time hatch into midge flies. These superficially resemble a stocky mosquito, but do not bite. However, many hobbyists (or their significant others) will not appreciate them escaping and flying around the house. Most will start freezing entire batches of Glassworms when pupae show up to feed fish throughout the summer. However, Glassworms collected and maintained in the larvae stage at about 35–45^0 F with occasional water changes will never change into pupae or midge flies. Aquarists have claimed having live and frisky Glassworms in July fooling them it is still winter. From May through August in ponds, Glassworms exhibit a mushy condition when it is impossible to get them home alive, but still can be frozen.

Besides only occurring in fishless ponds, the densest concentrations are found in water bodies receiving regular enrichment of nutrients from fertilizers applied to cropland or downhill from livestock feedlots. I found the oddest "mother lode" in an excavated livestock watering pond. The main challenge is finding fishless ponds. In the late 1980s, I had a unique position of Glassworm Scout working for Minnesota Worm Works (believe it or not, that was the company's name). My responsibility was locating ponds and contacting landowners for permission to cross their property. I was both amazed and



This must be heaven! Weed Shiner (*Notropis texanus*) in a cloud of Glassworms.



Checking Glassworm ponds in winter. (Top photo by Mary Stefansky)

Cutting an ice hole with a chainsaw (top) and dip netting Glassworms.

befuddled at the saturation of minnow leases with some going back to the 1950s and still going for original lease of about $25/year. Fortunately, most of these were next to or visible from roads and I found several hidden ones using U.S. quad maps, but today anyone with Internet access has Google maps and aerial photos at their finger tips. In late summer, ponds can be sampled with waders and a checker net. I used an eight-inch aquarium net which in thick ponds also easily collected all I needed just for myself. However, larger quantities can be collected with fine-mesh seines that are used the same way for minnows. When landing the seine start rolling the Glassworms toward the opposite end. Soon a growing sticky ball forms and can be as much as a quart or half gallon at the end of the seine.

Checking and collecting Glassworms in ponds during winter greatly raises the challenge bar. I came to appreciate and depend entirely on snow shoes. I could walk over 30 foot snow drifts with hardly any effort, but frequently had to help my golden retriever who often only had his head above the snow and gave me a look of total despair. We followed snowmobile tracks when we could, but they never went all the way to the ponds. Every time I headed off the track in the direction of the pond, my dog just kept following the snowmobile. At the pond, I'd use a hand auger to open a hole. Here, I had to use a much smaller net taped to a long handle which would tell me if Glassworms were present. My boss would return with a chainsaw to make a hole large enough to harvest nature's bounty.

If this all sounds like way too much for weekend warriors, NANFA member Jenny Kruckenberg is a retail distributor of Glassworms and can ship them guaranteed alive to U.S. locations. See her ad, below.

Literature Cited

Schmidt, K. P. 1984. Glassworms: a native food for native fish. American Currents. December 1984. North American Native Fishes Association.