An Aquascape for North American Stream-Dwellers

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Flowing waters are an important habitat for North American native fishes; a collecting trip to a local stream or river is likely to produce far better results, both in terms of quantity and diversity, than one to a local lake or pond. We also find that small streams are easier to collect. We can usually find a backwater, undercut bank, or deep pocket that we can surround with even the tiniest seine. It is our experience, though, that aquaria set up to receive our catch rarely produce the desired effect of presenting our fishes in a natural-looking habitat. Our intent on this particular collecting trip is to rectify this situation.

The first step in accomplishing this goal is observation. While still in the field, we pause to observe that the substrate at our collecting site is considerably coarser than at the local ponds. Rock is the predominant theme, a nd such gravel as is seen is coarse and ungraded, and occupies the interstices in the rock. Pebbles and boulders are rounded by the action of the current, rather than angular as are the pieces we see at the local quarry or on sale at the local pet shop. Plants are nearly absent. In some of the swift areas,we see small clumps of Fontinalis, and in a quiet eddy we see a bed of Elodea, but by and large primary productivity within the stream is accomplished by the inconspicuous layer of algae on the surfaces of the rocks. It is this algal mat that causes our feet to slip as we make our way back to the car with our catch.

Operating under the theory that the natural materials we find where we collect are far more likely to appear

natural than anything obtainable elsewhere, our next step is to collect a useful quantity of rock from the stream bed. Surely we have heard the scare stories which have circulated concerning the use of natural materials in the aquarium, but these make no sense. One often reads that a calcareous rock can effect a sudden, drastic increase in pH. But if such a rock existed, wouldn't it, in crushed form, make a better substrate for marine aquaria than the crushed dolomite currently in use? Such a rock would be a miracle-worker for the marine aquarist, who is constantly battling to keep his pH up in the 8.0-plus range. Compared to the dolomite substrate in a marine tank, very little of our rock's surface is exposed to the water. Centuries of exposure to the water have leached out any potentially dangerous minerals.

As we select a variety of interesting pieces, we examine the undersurfaces. Under each resides an entire community of organisms upon which our fish, prior to their capture, depended for their sustenance. There is a lesson in this for us. We begin to appreciate that food is constantly available to our fish, and that to keep our aquarium fish in as good condition as we found them, we must be prepared to provide the same, by feeding small amounts often.

On our trip home, we stop at our local aquarium-supply store. There we will find some of the essential ingredients for the aquascape we are trying to create. A thirty-gallon tank, if we don't already have one, will be perfect, because of its proportion of length to width. We also need an undergravel filter to fit it, and, as an essential component to simulate current, a powerhead. For gravel to cover the filter, we choose a natural-colored, coarse gravel, and in addition we obtain some medium (#3) grvel in the same color. A mixture of the two will give the ungraded appearance we saw at the stream. We also intend to try a new filtration technique which has been highly recommended in recent articles. This is to install a layer of filter floss beneath the gravel bed. A quantity of floss sufficient for this purpose is purchased.

We hadn't collected any plants while in the field because it has been our experience that the Fontinalis we observed does not thrive when kept continuously at room temperature, as our fish do. A reasonable facsimile is Java moss, Vesicularia, and this will be our concession to botanical decoration. The Elodea is omitted because we intend to portray only the swifter portions of the habitat. Java moss isn't available in our pet store, so we will have to obtain some at the auction of our local fish club.

Upon our arrival home, we drop an airstone and a sponge filter into each of our collecting buckets and allow them to warm to room temperature naturally. An acclimation period of up to 24 hours may be necessary, as the autumn stream temperatures are as much as 15°C colder than our fishroom. The buckets are kept covered in the interim. At the completion of the acclimation period they are intro-

duced to temporary quarters, a twenty-gallon tank.

We've taken advantage of this time to begin to set up our new thirty. We put it on a special stand to allow the installation of a shadow box. The assembled undergravel filter is installed, and covered with a layer of filter floss. Above this goes our custom blend of gravel, and then we try to recreate the scenery at the collecting site by virtually covering the gravel with rock.

Here again we've violated the recommendations of the textbooks. They say that the arrangement here described can interfere seriously with the flow of water through the gravel bed, resulting in dead spots where oxygen concentration drops and anaerobic bacteria flourish. The course gravel and the powerhead are our attempts to compensate for this effect. It has been our experience that these measures are adequate.

A bucket of "feeder" goldfish serve to establish a working colony of nitrifying bacteria in our gravel bed. During their period of residency, the outlet of the powerhead is directed across, rather than along, the tank to reduce the effect of the current it produces.

During the run-in period, we construct a shadow box. The illusion of depth that a properly constructed shadow box can create must be seen to be believed. Ideally, the impression we wish to convey is that the tank goes back forever, perhaps sloping upward slightly towards some unseen distant bank. This effect is achieved by decorating the shadow box exactly as the tank is done, except that it is largely unlit. The box itself is constructed of cheap packing-crate lumber, and the inside is painted some subdued color such as flat black, brown, gray, or olive drab. The lid is removable so that the decorations can be added after the box is positioned.

A nice touch is a convoluted piece of driftwood, which we obtain on a subsequent collecting trip to a local reservoir. A piece of appropriate size is selected and cut in half at a sharp angle. The root portion is placed in the tank, with the cut edge flush against the rear glass. The remaining piece goes in the shadow box, with its cut edge exactly facing its counterpart. Properly executed, this bit of legerdemain results in the illusion of appearing to penetrate the glass. It's too bad we can't do the same with some of the rocks. It may prove necessary to weigh down the wet half of the driftwood with a piece of rockwork until it has soaked up enough water to sink of its own accord.

The next week brings our local aquarium-club meeting, and with it, the anticipated auction. As expected, we are able to obtain a started portion of Java moss at a bargain price. We install it in our aquascape where it will gain a foothold on our driftwood.

The aquascape is nearing completion. We await only the establishment of the nitrifying bacteria before we can add our native fishes. On the day when our water-chemistry tests reveal that the cycle is complete, we transfer the goldfish to other exhibits (which coincidentally hold largemouth bass or shovelnose catfish) and introduce our wild-caught specimens. Now we can relax and examine our catch.

Here we identify several Creek Chubs (Semotilus atromaculatus) captured in the smallest stream we visited. With them we obtained a fair number of Blacknose Dace (Rhinichthys atratulus). A congener, the Longnose Dace (Rhinichthys cataractae) was obtained in very limited numbers from a mid-sized stream. The Common Shiners (Notropis cornutus) we now identify may have come from the same stream or perhaps from the larger river where we took the Spottail Shiners (Notropis hudsonius). Hiding in a corner we see a Cutlips Minnow (Exoglossum maxillingua). We will have to keep him well fed or the eyes of his tankmates will be in jeopardy. Another cyprinid we are delighted to see is the Bluntnose Minnow (Pimephales notatus).

Suckers occupy our tank as well. A small school of young White Suckers (Catostomus commersoni) hovers in mid-water, and here and there among them we recognize a Longnose Sucker (Catostomus catostomus), which can be identified by the much smaller scales. It is our hope that these can be raised to maturity, when the males will exhibit a brilliant pink band down the sides when in breeding condition.

And there are bottom dwellers. A Tessellated Darter (Etheostoma olmstedi) has taken up the defense of a prominent rock in the front center of the tank. Lurking (and there is no better word for it) beneath a rock is a slimy sculpin (Cottus cognatus). Had we captured him in the spring, we would have immediately released him, knowing that he wouldn't have survived the high summer temperatures in our fish room. This season is appropriate for his retention; he should do well until next summer. For each of these bottom-dwellers, flake food will not do, but the supply of frozen brine shrimp in our freezer will prove acceptable.

We are hardly able to ask our fishes whether they "prefer" the current in the thirty to the relatively still water in the twenty, but they seem to thrive. With the numerous hiding places that are available, they feel more confident, and are often observed behaving as naturally as one might expect under the circumstances. An aquascape such as this could be repeated elsewhere in the country; the names of the species may change, but the theme remains the same. Try it where you live.