

# Practical Considerations for Collecting

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I recently had the experience of escorting a group of AKA members on a collecting trip through southern New Jersey. Since none of the group had collected in New Jersey previously, our intent was to sample several of the different habitats from the inland Pine Barrens areas eastward through the coastal brackish-water bays and marshes. The broad scope of our collecting, together with our limited amount of time, necessitated our performing all aspects of collecting at an accelerated speed. Due to the nature of our collecting, a disproportionate amount of care and effort was required to insure that everyone was able to return home with viable specimens. Most of the members of our party were quite surprised at the seeming fragility of the fishes collected.

I have since taken the time to evaluate the differences (in terms of methodology) between the collecting done that day and the collecting that I typically do on my own on a much smaller scale and, almost always, at a more realistic pace. At first glance such methodological differences seem, at best, extremely subtle. It is only upon closer examination of the various parameters of collecting, handling, holding, transporting, etc., (and the specific ramifications of each) that the importance of such seemingly

subtle differences becomes apparent. Therefore, despite the fact that much of what appears below may seem self-evident, I have seen fit to enumerate my evaluations in detail.

1) **Be parsimonious.** One's orientation toward collecting plays a large role in determining one's success. Goals should be set realistically: specifically, one should plan on returning with only a bare minimum of specimens. Taking only what you need is obviously good ecological sense. But it has practical consequences as well. The fewer specimens taken per given amount of holding or transporting space, the greater their chances of surviving (all other variables held constant).

2) **Cull fishes immediately** after they are captured, e.g. after every haul of the seine, etc. Culling should not be done in the net, however. Instead transfer the entire catch to a suitably sized glass- or plastic-sided tank and quickly return all but the best specimens. The specimens to be kept are then to be transferred to holding containers. All of this should take place with a minimum of handling.

Such a procedure keeps the fishes out of water for a minimum amount of time, thus reducing somewhat the trauma of capture. Working quickly also minimizes the time the fishes must spend crowded in a small container.

3) **Keep specimens uncrowded** in holding containers. Be very liberal in estimating the amount of space needed to hold the fishes you plan to keep.

4) **Holding containers** should be selected strictly on a functional basis. They should be light colored to reflect heat, and opaque, to eliminate any "greenhouse effect". Plastic pails used to package five- and ten-pound sizes of Tetra Min are ideal. These containers should be kept in a shaded and, if possible, breezy location or immersed in the water. Never keep holding containers in direct sunlight during warm weather. It is best to keep the insides of the holding containers dark by covering or partially covering them. This not only helps to keep the water inside cooler but also appears to have a quieting effect on the fishes, thus rendering the experience that much less stressful to them.

Alternatively, fish may be held in wire mesh baskets, etc., immersed in the water.

5) **Water used to hold and transport fishes** is best obtained from the body of water where they are collected. Turbidity resulting from collecting activities may necessitate obtaining water a short distance upstream or obtaining water before collecting begins. If excessively turbid or polluted water is to be anticipated, water may be brought from a well established aquarium, preferably of similar chemical characteristics. Even if this is done one should

add at least a small amount of water from the habitat, if practical.

Water changes should be made periodically during the holding period. Experience will dictate the frequency with which such changes should be made.

6) **Don't linger.** When a sufficient number of specimens has been accumulated, a final cull should be performed retaining only the best of the best. If the species in question is sexually dimorphic be sure to cull in accordance with the desired sex ratio. It makes no sense to keep the six most spectacular specimens if they are all males. After a final water change the fishes should be placed in their transporting containers and rushed to their final destination. Such containers may be the same as used for holding. Additionally, plastic bags, glass gallon jars, and/or rigid plastic "jars" (obtainable from pharmacies) may be used. These smaller containers, in turn, may be packed within styrofoam boxes.

Do not attempt to obtain information for the collecting record after the fishes have been collected and/or packaged: time is too great a limiting factor at this point. Water chemistry and all other environmental parameters should be recorded prior to the collection of fishes.

7) **Temperature** is perhaps the greatest limiting factor affecting survival. That fishes must be kept cool during holding and transporting cannot be overemphasized. If the vehicle in which the fishes are to be transported has air conditioning, be prepared to use it full blast if conditions warrant. In the absence of air conditioning ride with all windows open. In excessive heat and/or in emergency situations ice cubes may be placed between containers in the styrofoam boxes, or added directly to the containers (a few at time, of course). If ice cubes are used temperature must be monitored closely to insure that cooling is not effected at too rapid a rate. If cooling is not extremely rapid it will rarely, if ever, have deleterious effects on natives.

8) **Open containers periodically during transport.** This is only important over long distances or when traffic congestion is encountered, etc. After opening the container disturb the water surface vigorously to promote aeration. Also be sure to remove any dead or dying fishes immediately.

9) **Observe newly-collected specimens closely during acclimation.** Look for signs of distress as water from the aquarium is gradually mixed with water from the transporting containers. Many, if not most, fishes experience a very critical transition period between the time they are captured and their ultimate adjustment to aquarium conditions. This critical period may vary in duration (between individuals as well as between species) but rarely exceeds 48 hours. Most natives are very hardy in the aquarium: if

they are going to be lost at all it will almost always be during this initial transition period.

To help fishes through this period, remove as effectively as possible all potential sources of stress from within their aquarium. Newly collected fishes should be isolated from other fishes for the duration of the transition period, since they will be at decided disadvantage in any aggressive encounters at this time. The aquarium should be dark and well-planted and should offer the fishes a place of refuge.

Fishes should be introduced only to well established aquaria. "New" (i.e. aged and/or chemically treated water from the tap) should be avoided or, at best, only used in an emergency. Generally, fishes will make a better transition to "seasoned" water of slightly differing water chemistry than to "new" water which more closely matches that found in their natural habitat.

Water should be clean and well aerated, and the fishes themselves should be uncrowded. One need not attempt to feed newly collected fishes immediately. Rather they should show signs of becoming adjusted to their new environment before food is offered.

In line with the above-mentioned transition period, shipping fishes soon after capture is to be avoided. Instead, fishes should be held in the aquarium for at least several days to a week: specifically, until it is certain that they have made a complete adjustment to life in the aquarium. During this period the fishes should be conditioned on a high quality diet. (Be sure however, to cease feeding at least 24 hours prior to shipping).

10) Plan collecting trips sensibly. If you are working by yourself and have plenty of time to spare, a little common sense should suffice in lieu of extensive planning. However, a collecting trip of larger proportions should be well planned.

Avoid attempting to sample too many habitats in a single day. Concentrate on one or two productive sites. If allopatric species must be obtained, choose representative habitats that are as close to each other as possible, as calculated in driving time.

Hopefully the above-stated guidelines will not be taken for granted. Be assured that subtle departures from these procedures can very significantly affect survival rate. Although certain species will tolerate much more mistreatment than others, overall success can be greatly enhanced by closely adhering to these guidelines.

I will conclude by reiterating what was stated at the outset: Specifically, take only what you really need and have room to care for. It is much more rewarding to return home with a few clean, healthy specimens than whole boxes full of dead fish.