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School of Fish: UT's Aquatic Library

“They haven’t been seen since the ‘90s,” says the curator as he pulls open a slim drawer in a massive wooden filing cabinet. Thumbing through thousands of small identification cards, he at last lands on the prize. “This is a good one,” he says, briskly making his way to the proper row of sliding doors. Pressing an arrow-shaped button, the electronic “compactors” shift steadily to the right. Inside the newly formed aisle, he begins to comb through a single grouping of the countless jars. All around are species instantly recognizable: sharks, trout, and eel-like lampreys, but all a shadow of their animated selves as they rest lifelessly in yellow liquid.

“Here it is,” says the curator nonchalantly as he presents the pale specimen. It appears insignificant, a wrinkled and bleached carcass no more than two inches long. “We have about 20 to 30 individuals, and there’s only a couple other collections that have them.” The jar bears a label that reveals the cadaver’s identity. “Slender Chub, 1969.” The label denotes a creature that couldn’t be appreciated in its time, one of the last slender chubs to ever be seen. Yet here it was, floating tranquilly in a jar of ethanol, the only source of memory for a small fish species that couldn’t withstand the disruption of its native Clinch River.

It is one of thousands of specimens of tiny, rare fish that are found nowhere else in the world except the watersheds of the Appalachian Mountains and the tributaries of Tennessee. “Minnows and darters, they’re definitely the most endangered and least described fish that we have in the collection,” muses the curator.

It’s true. If not for Dr. Benjamin Keck, Director and Curator of the Etnier Ichthyological Collection, and his fish-expert colleagues, multitudes of underappreciated and understudied species would not have an academic home for essential research and conservation efforts. To Dr. Keck however, safeguarding these rare fish examples is just as important as preserving the remaining 450,000 specimens

from 206 families found all over the world, as he continues the work of his predecessor, David Etnier. Started around 1965 as Dr. Etnier's personal collection, the myriad of makeshift jars and cheap alcohol preservation was never expected to be a permanent fixture of the University of Tennessee. As the years went by and the collection grew however, Dr. Etnier secured a UT-managed endowment to keep the lights on in the blossoming library of fish. Between the donations from the endowment and contracts from government agencies like Tennessee Valley Authority and the Tennessee Wildlife Resource Agency, the ichthyological collection has managed to stay maintained and slowly modernize. After the torch was passed to Dr. Keck, who took the reins from interim to permanent curator of the collection after his post-doctoral work with Etnier, the collection expanded rapidly, moving to larger square footage at the top of Hesler Biology Building in 2006, and even launching a fully digitized database of the whole collection around the same time.

To Dr. Keck however, it is only the beginning of the work he wants to accomplish with the collection. "We're trying to make sure we move more towards the outreach side," he says with a tone of aspiration. Indeed, a scientific establishment can struggle to be appreciated and funded when it is relatively unheard of, and despite the collection being one of the top 25 in the nation and the largest in Tennessee, you may be hard pressed to find someone in Knoxville who knows about it. "I'd love to put up a display at the Student Union," says Dr. Keck. He also dreams about having a showcase put in at McClung Museum, which would provide a small, public snapshot of the immense collection. "We may even get our own building eventually," he adds, continuing to contemplate his ambitions. "But we want to show there's a reason for people to be interested."

In the meantime, however, Dr. Keck has been working on some major initiatives to meet his goal of being more "outward facing," including developing K-12 lesson plans for teachers to use and get their students more excited about fish, with the collection becoming a possible field trip destination. He is also working on taking high-quality photos of many of the 450,000 specimens to be uploaded to the online

database, making it more accessible to expectant researchers. But this hefty undertaking needs one thing that the collection is always looking for more of: funding.

Maintaining the preservation jars by changing out and buying more alcohol, as well as keeping them organized is a task that can usually be accomplished by himself and the collection manager, Jennifer Parris. The duo increasingly works on preparing and mailing specimens all over the nation for undergrad and postgrad researchers to use as “loans,” as well as gifting DNA-rich tissue samples on request. The job becomes overwhelming, however, when stacks of new specimens arrive at the doorstep, sent to the collection by survey work from government agencies or even other fish collections that could not stay funded long-term and were forced to close down.

“Additional funding allows undergraduate students to come in and work on sorting them out, so we’re always looking for more of it,” says Dr. Keck. A leaky roof has proven a persistent problem for the collection, as well as concerns over the future due to a new dean and a university restructuring that separates Arts and Sciences. The university’s Office of Information Technology has slowed progress on updating the database, and further technical problems frequently plague the electric compactor-door system as well as the vital tissue sample freezers. “We expect to run out of room in 5 to 10 years.”

The curator’s mood lightens however, as he moves over to a makeshift plastic container, much larger than the standard glass jars. Twisting off the lid, he presents one final specimen, an alien-looking creature- once cared for as his pet. “He jumped out of the tank,” he says disappointed, but with a grin of admiration. The long gray fish with bulging black eyes and limb-like appendages gives a blank, Muppet-like stare as Dr. Keck pulls it out of its final resting place. “He’s an African lungfish, so it’s not the air that killed him, but the fall,” he says with a slight laugh. With a small chunk taken from its side for a tissue sample, the lungfish has been given the highest honor you could hope a pet fish to receive: immortality in the sacred halls of ichthyology.

Which fish in the collection is the most important, be it the extinct and endangered specimens, or the respected pets with a more personal connection? The curator's answer is immediate and emotionless.

“They're all important.”

Note to the Editor

Dr. Benjamin Keck, Director and Curator of the University of Tennessee Etnier Ichthyological Collection (UTEIC)

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