



Open Swim

Endangered species of the Comal get a habitat makeover

by Susan Hanson

FROM ABOVE, IT LOOKED LIKE AN UNSIGHTLY ASPHALT SCAR, more than 16 acres of impervious cover dotted with a handful of nondescript structures. Calling this property an environmental jewel in the rough would seem a stretch; yet, that's how some forward-looking people in New Braunfels, Texas, saw it.

Ironically, this industrial site, used from 1940 until 2004 by New Braunfels Utilities, is also home to the headwaters of the pristine Comal River. At the urging of the State Health Department in the early 1930s, the main spring from which the river flows was encased in concrete and capped, a measure intended to prevent contamination of the city's main source of drinking water. Thus, what had been for millennia a magnet for human life — first for native tribes as long as 10,000 years ago and, later, for the Spanish and Germans who settled there — was hidden for decades.

But humans aren't the only beings dependent on this cold, clear water. Four endangered species — the Comal Springs riffle beetle (*Heterelmis comalensis*), the Comal Springs dryopid beetle (*Stygoparnus comalensis*), the fountain darter (*Etheostoma fonticola*), and Peck's cave amphipod (*Stygobromus pecki*) — have long existed here too. Their survival, however, has been threatened not just by drought and excessive water use, but also by runoff and the proliferation of invasive plants.

Anyone who doubts the fragility of these species need only look at the drought of the 1950s, after which the fountain darter had to be reintroduced using stock from the San Marcos River. That's a scenario no one wants to repeat. Fountain darters need clean flowing water, consistent water temperature and submerged vegetation for survival, all of which are more likely to be present in a healthy aquatic ecosystem. Young fountain darters, in particular, need heavy vegetation and the slower water that comes with it to thrive as they develop.

A vision of the future
for the Comal River and
Springs. RENDERING
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After New Braunfels Utilities moved its facilities in 2004, the aforementioned property around the Comal's main spring lay essentially unused; almost a decade would pass before NBU, along with partners in the community, unveiled its new vision for these 16 acres: Headwaters at the Comal.

The Headwaters project broke ground in 2016 with the removal of most of that asphalt. The spring was partially uncovered, allowing air and light to reach that part of the ecosystem for the first time in more than 80 years. "Luckily, we had some very sensitive board members," says Nancy Pappas, managing director for Headwaters at the Comal. "We have to do the right thing."

The "right thing" in this case is nothing short of magical: turning an old brownfield into a showcase for riparian, woodland and prairie restoration. It's a team effort, with partners including the Wildflower Center, LakeFlato Architects, Ten Eyck Landscape Architects and the city of New Braunfels. The Center's Ecological Research and Design team participated in the master plan, is overseeing construction, and will eventually train Headwaters staff on landscape maintenance. "We created restoration strategies that ultimately guided landscape design," says Environmental Designer John Hart Asher.

Headwaters at the Comal aims to be an information hub for the latest in water and energy conservation. But it will also be a place to observe and learn about plants and animals that thrive in Central Texas riparian and underwater ecosystems. Eyeless, shrimplike Peck's cave amphipods, for instance, live in rock crevices near spring orifices and eat organic material such as decaying leaves and each other.

As City of New Braunfels' Watershed Program Manager Mark Enders notes, the extent of impervious cover on the property caused significant runoff, carrying pollutants directly into the Comal. These included not just soil, but contaminants from vehicles and industrial residue — all of which are harmful to fauna trying to survive in these waters.

The Comal Springs riffle beetle, for instance, subsists on algae and plant-based detritus, both of which degrade with reduced springflow and increased pollution. The Comal Springs dryopid beetle also needs clean, flowing water: Its form of respiration — an ingenious gas exchange facilitated by a thin air bubble held in a tuft of unwettable hair on its belly — depends on healthy levels of dissolved oxygen in the water.

Removing asphalt was just the first step. "We've put in a lot of berms and swales, and we've planted hundreds of plants," Pappas explains. These include native perennials such as fall obedient plant (*Physostegia virginiana*), flame acanthus (*Anisacanthus quadrifidus*), blue mistflower (*Conoclinium coelestinum*), pigeonberry (*Rivina humilis*) and shade-loving Turkscap (*Malvaviscus arboreus*), as well as trees such as Texas persimmon (*Diospyros texana*), chinquapin oak (*Quercus muehlenbergii*), Eve's necklace (*Styphnolobium affine*), bald cypress (*Taxodium distichum*) and pecan (*Carya illinoensis*). Pervious nature trails wind through what will ultimately be prairie, savanna and woodland ecozones.

Work is also being done along Blieders Creek, which connects the major spring to the Comal River. "We've had a



FROM TOP Fountain darter, Comal Springs dryopid beetle, Peck's cave amphipod PHOTOS John Abbott

pretty extensive effort to remove [invasive] hygrophila," says Enders, who also manages the Edwards Aquifer Habitat Conservation Plan. In its place, he and his team are planting native Carolina fanwort (*Cabomba caroliniana*), creeping primrose-willow (*Ludwigia repens*), delta arrowhead (*Sagittaria platyphylla*) and Illinois pondweed (*Potamogeton illinoensis*), all of which hygrophila (*Hygrophila polysperma*) can crowd out.

"Through this aquatic restoration, we're trying to provide the best available habitat," says Enders, adding, "We've seen some increased populations [of fountain darters]." It's a hopeful outlook for these and other creatures, as every step toward cleaner water opens up greater chances for life. ■