BLACK BEARS: Riparian Bottomland and Water
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Editor's note: The following essay is the seventeenth in a five-year series on water resource stewardship in the Cowpasture River Watershed, sponsored by the Cowpasture River Preservation Association and published by The Recorder. The goal of the series is to create awareness among students, citizens and officials of the critical need to protect our surface and ground-water resources, and to stimulate interest in progressive stewardship.

WILLIAMSVILLE – In the Cowpasture River Valley of Virginia three mammals readily come to mind as being dependent upon cool, clear water – the northern river otter, the American beaver, and the common muskrat. Several birds are also dependent upon clear water – the belted kingfisher, the great blue heron and the osprey. Less well recognized by either wildlife biologists or the general public as making multiple uses of our valley's water resources would be the black bear (Ursus americanus).

A Black Bear Swimming in a Mountain River
Photographic attribution hereby given to Neil Jernigan http://www.jerniganoutdoorphoto.com/

Keeping Bodies Hydrated:

Black bears use the surface waters of the Bullpasture and Cowpasture Rivers, their tributary creeks and drafts, and resurging karst springs for a variety of animal purposes. We all know that bears fish for some of their food – a fat and sassy trout released by the Coursey Springs Fish Cultural Station being the best. And if we stop and think about it, we know that black bears must have regular access to cool,

clear water to keep their bodies properly hydrated. In addition to drinking water, black bears self-manage excess heat through a variety of animal behaviors such as panting, balancing their energy expenditures and caloric intake, resting in shaded day beds with their bellies touching cool ground, lounging on a large horizontal tree limbs and immersing in rivers, creeks, pools and springs. [See: Sawaya, page 129] *Conservation Lesson: Black bears require fresh water several times each day in all seasons to keep their bodies adequately hydrated.*

Hard Mast:

In the Appalachian Mountains of Virginia, characterized by world-class oak, hickory and pine forests, black bears feed in the late summer, fall and early winter on hard mast – i.e., oak acorns, hickory nuts and walnuts. Northern red oak in particular produces acorns that are rich in fats and and essential nutrients; however, acorns also contain tannins which are bitter and astringent. Oak acorns, hickory nuts and walnuts, furthermore, are all dry with hard and difficult to digest outer shells. Black bears fortunately produce copious amounts of saliva which makes it easier for bears to masticate shells and tannins. And in addition, black bears increase their consumption of water during the hard mast season. Other forest dwelling mammals that feed upon shagbark hickory nuts include racoons, fox squirrels, gray squirrels, southern flying squirrels, eastern chipmunks, white-footed mice, wild turkeys, red-bellied woodpeckers and in earlier times Native Americans and the Appalachian Scots-Irish. *Conservation Lesson: Black bears require fresh water several times each day when feeding on dry and hard mast.*

Winter Hibernation:

The black bear is different than human beings, the northern river otter, American beaver or common muskrat because evolution has adapted the bear in several important ways for hibernation that, as a consequence, influence their demand for water. The bear's sweat glands, like other carnivores, are primarily located in their foot pads and poorly developed (at least in relationship to your sweat glands or mine or most other mammals for that matter) and this attribute aides in conserving water. The black bear has thick fur and in the fall a thick fat layer, which serve to conserve energy during cold winter hibernation. But these physiological attributes under adverse situations work against a bear, i.e., in hot weather when the ambient temperature is high or at lower temperatures when a bear is being pursued by predators. *Conservation Lesson: Black bears may become heat-stressed when pursued in warm weather.*

A Black Bear Cooling Off in a Livestock Watering Tank in the Bitterroot Valley of Montana
Photographic attribution hereby given to Michael Sawaya of the MPG Ranch
VIEW VIDEO AT https://www.youtube.com/watch?v=CYJx9f9KfFE&authuser=0

Hot Weather Behavior:

"Water is essential for hydration in American black bears (*Ursus americanus*) and other species; however, its role in thermoregulation is poorly understood. In 2010, we [the MPG Ranch] established a network of remote cameras to monitor wildlife in the Bitterroot Valley, Montana, USA. One of our objectives was to document and describe American black bear behavior at natural and artificial water sources. We detected male and female adult, subadult, and cub of year black bears immersing in water sources to thermoregulate. Bear use was concentrated at one livestock tank, one road puddle, and one pond in areas with relatively little human disturbance. Bear use steadily increased over summer, peaking in late summer when ambient temperatures were high and fat layers were thick. Our results demonstrate that water is an important thermoregulatory resource for some bear populations, though more research is needed to understand how ursids use behavioral thermoregulation to dissipate excess body heat and avoid hyperthermia." [See: Sawaya, page 129] **VIEW VIDEO ABOVE.** *Conservation Lesson: Black bears require rivers, creeks, drafts, springs, ponds or water holes in which to wallow or swim and to cool down particularly in hot weather.*

A Black Bear Sow with Cub Up a Tree in the Berriedale Farms Forest
Within 250 Feet of the Tangled Riparian Bottomlands of the Cowpasture River
Photographic attribution hereby given to the Hillbilly Hunting Club

Cover, Concealment and Escape:

Black bears usually stay within 250 feet of cover and concealment, and an escape route. The “breaks” of the Cowpasture River, a natural riparian bottomland, are an impenetrable tangle of downed tree

trunks, autumn olive, bull briar and brambles. In this forested riparian bottomland, eastern white pines and several species of oaks on nearby higher ground with rough bark provide important escape trees for bear cubs. And the riparian bottomland itself is a black bear travel and dispersion corridor. *Conservation Lesson: The very best cover and concealment, and escape routes for black bears are found in close association with water – rivers, creeks, drafts, springs and ponds.*

Rescue Centers:

In the Cowpasture River Valley of Virginia, the nearest black bear cub rescue center is at The Wildlife Center of Virginia. In the Appalachian Mountains, Appalachian Bear Rescue (ABR) is a one-of-a-kind black bear rehabilitation facility located just outside of the Great Smokey Mountains National Park in Townsend, Tennessee. See the URLs below under "Research Literature".

Conservation Measures:

- Establish or protect existing heavily forested buffers along rivers, creeks and drafts, and around ponds, springs and seeps.
- Prohibit the pursuit of black bears and particularly sows, during warm weather in August, September and October when temperatures reach 75 degrees Fahrenheit or higher.
- Release shagbark hickory and northern red oak trees found within 250 feet of cover, concealment, escape and water that have the potential of becoming dominant in the forest canopy and producing many nuts or acorns.
- Release potential bear den trees of 36" DBH or larger that are close to escape, cover and concealment, and close to water and protect these trees with at least a one acre buffer area.
- Favor and release wherever possible soft mast trees and shrubs within 250 feet of cover, concealment, escape and water including flowering dogwood, downy serviceberry and Virginia redbud.

Research Literature:

- Appalachian Bear Rescue. – See: http://appalachianbearrescue.org/
- Black Bears Cooling Off in a Livestock Watering Tank, Wildlife Pond and Puddle – See: https://www.youtube.com/watch?v=CYJx9f9KfFE&feature=youtu.be
- Sajecki, Jaime and Steffen, David, "Black Bear Management Plan 2012-2021" (Richmond, Virginia: Virginia Department of Game and Inland Fisheries), 2012, 107 Pages.
- Sawaya, Michael, et al., "American black bear thermoregulation at natural and artificial water sources", URSUS, Jan 2017 : Volume 27 Issue 2, International Association for Bear Research and Management, pages 129-135.
- The Wildlife Center of Virginia – See: https://www.wildlifecenter.org/