

# Water stories: deep histories of climate change, ecological resilience and the riverine world of the Cherokees

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*Abstract:* Cherokee people understand climate change. In their traditional homelands, located in the southern Appalachian Mountains, Cherokees have accumulated vast repositories of knowledge – known as traditional ecological knowledge (TEK) – about changes in geology, fluctuations in local ecosystems and the importance of biodiversity. This knowledge, collected and stored in oral traditions, sacred beliefs, and daily life, ensures the resilience of Cherokee communities. Water stories are key to this resilience. As this article reveals, water stories are sacred stories, part of a living body of knowledge that connects the Cherokees to the landscapes and waterscapes of southern Appalachia. Water stories flow through Cherokee scientific and spiritual knowledge. They are stories thousands of years in the making and provide vital insights that can inform the co-governance of rivers and clarify strategies for living in balance and harmony *with* local ecosystems. In the old stories of the Cherokee people are fresh insights that can guide climate resilience into the future.

*Keywords:* Cherokees, southern Appalachia, traditional ecological knowledge (TEK), deep time, climate change, water, rivers.

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‘The earth is a great island floating in a sea of water, and suspended at each of the four cardinal points by a cord hanging down from the sky vault, which is of solid rock’. So wrote James Mooney, an American ethnographer employed by the Smithsonian Institution to record the oral traditions of Native American people during the late 19th and early 20th centuries.<sup>1</sup> Mooney’s report was the culmination of several years living among, and talking to, Cherokee informants at the ‘Qualla Boundary’ during the 1890s. His informants included Elders and Medicine Men such as Ayunini (or Swimmer), John Ax, and the interpreter James Blythe. These men represented a small cohort of Cherokee knowledge keepers who lived in the mountains of western North Carolina at the Qualla Boundary, or ‘The Qualla’, the homeland of the Eastern Band of Cherokee Indians.<sup>2</sup>

The Eastern Band fought the federal government for decades after the passage of the Indian Removal Act (1830) and the infamous Trail of Tears in the late 1830s to remain connected with this precious piece of their ancestral homeland.<sup>3</sup> Located in *Shaconage*, a translation of the Cherokee *tsakonage*, the ‘place of the blue smoke’, Americans today call this ancient landscape the Great Smoky Mountains. It is a section of the Appalachian mountain chain that stretches from upstate New York in the Northeast to Georgia in the Southeast.<sup>4</sup> The Qualla is over 2,000 feet above sea level and constitutes a vital link to the mountain peaks, rivers, watersheds, and cultural traditions that once formed the historic ‘out towns’, one of five major regional clusters that comprised the traditional homelands of the Cherokee people.

When Mooney visited the southern Appalachian Mountains, Eastern Band Cherokees understood *Shaconage* as a living piece of their ancient homeland, ‘a great island floating in a sea of water’. Cherokees told Mooney of how ‘the Buzzard’ created the valleys and mountains by striking the ground with its flapping wings. In listening to Cherokee knowledge keepers tell this and other origin narratives, Mooney learned what Cherokee people and their ancestors had known for thousands of years: Native towns, villages, and farms nestled along the rivers of the southern Appalachians belonged to delicately balanced ecosystems.<sup>5</sup>

James Adair witnessed these webs of ecological vitality when he interacted with the Cherokees in the 18th century. Adair observed how seriously the Cherokees took their responsibility toward the rivers and mountain watersheds of their homeland. Adair wrote, the Cherokees were ‘strongly attached to rivers, – all retaining the opinion

<sup>1</sup> Moses (1984).

<sup>2</sup> Mooney (1992: 239); Bender (2015: 247–57); Rodning (2007: 464–84).

<sup>3</sup> On the legal and political struggles of the Eastern Band of Cherokee Indians see Finger (1991).

<sup>4</sup> Linzey (2008: 31); Faust (2010: 208–17).

<sup>5</sup> Aftandilian (2011).

of the ancients, that rivers are necessary to constitute paradise'.<sup>6</sup> In contrast to Western scientists, 18th-century Cherokees did not objectify and commodify the land and waterscapes; they lived *with* them, nurturing biodiversity as they maintained what Cherokee Scholars Heidi Altman and Thomas Belt refer to as reciprocal relationship with the mountains that they viewed as sacred and rivers which they saw as part of an extended kinship system.<sup>7</sup> Water (*ama*) stories reminded Cherokee people of both the environmental sensitivity of mountain biomes and their interconnectedness to floodplains. For as long as Cherokees could remember, they and their ancestors strove to live in balance and harmony – or to use the Cherokee language, *tohi* and *osi* – with their mountain homeland.<sup>8</sup> The flow of a local river (*uweyv*) provided Cherokees with a constant reminder of the delicate nature of ecological balance and harmony.

Such beliefs live on today. Like other Native communities throughout the Southeast, such as the neighboring Catawbans, Muscogee (Creek), or the people who today refer to themselves as the Lumbee, storytelling remains critical to Cherokee ecological philosophies. Through oral traditions, song, dance, petroglyphs, and ceremony, Cherokees continue to develop, refine, and renew their ecological knowledge.<sup>9</sup> Cherokee stories are not mere 'myths'; they contained moral lessons, didactic histories of human and nonhuman relationships, religious beliefs, places, and scientific knowledge. They are, as anthropologist Dave Aftandilian observes, 'sacred stories'.<sup>10</sup> Cherokees continue to embed water stories in sacred beliefs and ceremonies, in everyday interactions, and in their clothing, jewelry, and body art. 'The river was highly respected,' Cherokee beloved man Jerry Wolfe explained in 2015. 'If we didn't have water,' Wolfe added, 'everything would die – plants, animals, people, all things would be gone.'<sup>11</sup> Water stories, in other words, are integral to Traditional Ecological Knowledge (TEK), a living body of knowledge that informs philosophical and governing frameworks and gives cultural meaning to Cherokee sovereignty. TEK, as it has always done, teaches Cherokees that they lived *with* the land and the rivers, not *on* the land and adjacent to waterways.<sup>12</sup>

This essay places Cherokee storytelling in conversation with geological and archaeological evidence, climate histories, and written archives traditionally associated with historical analysis. This approach re-centres our attention on a neglected aspect

<sup>6</sup> Adair (1775: 248).

<sup>7</sup> Wazinyatawin (2012: 35).

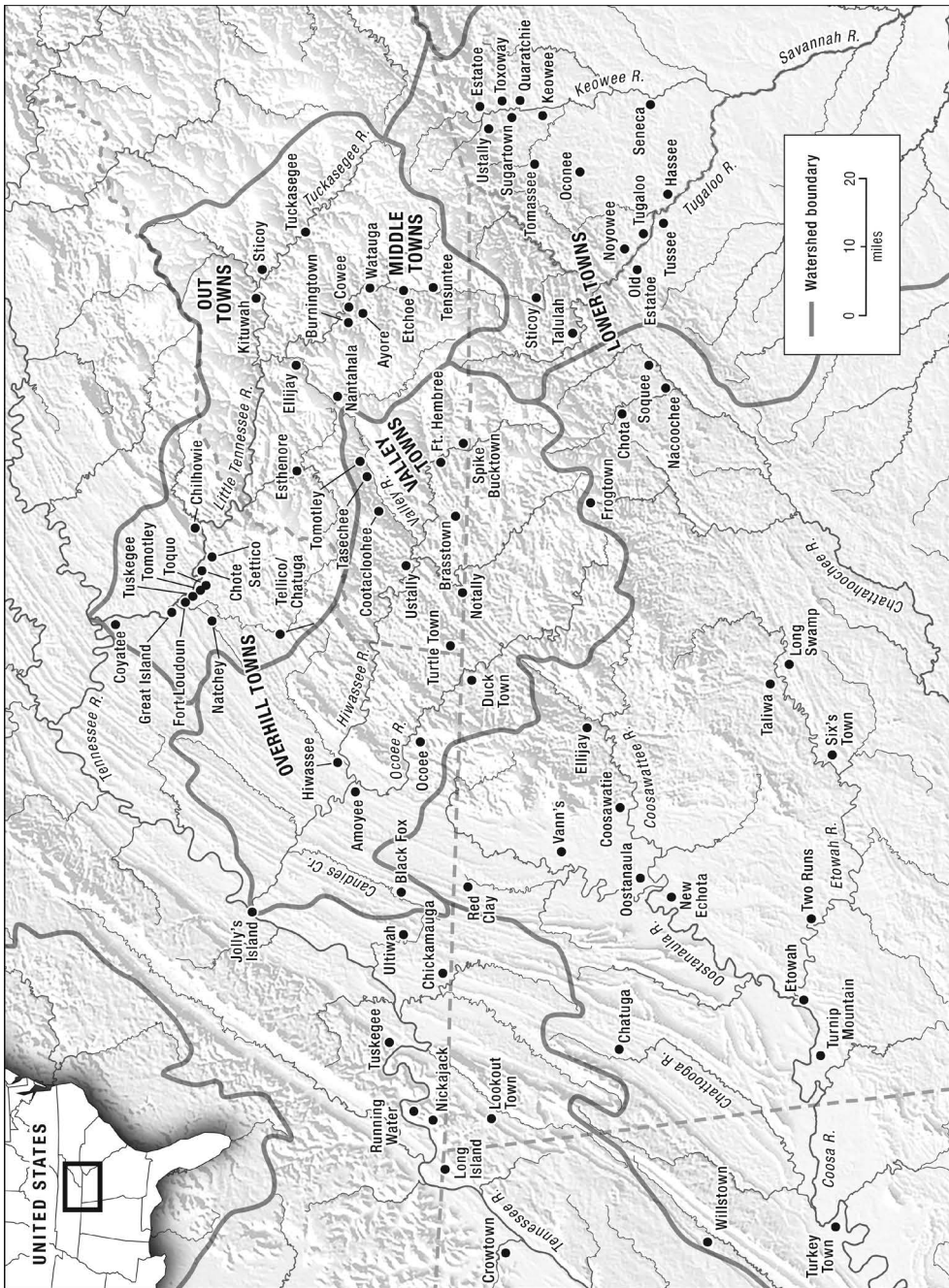
<sup>8</sup> Altman & Belt (2008: 90–98); Chapman *et al.* (1982: 115–21); Wang & Leigh (2012: 1061–66); Ellis *et al.* (2020: 2–19). For a point of comparison on this point see Gelles (2010: 119, 121).

<sup>9</sup> Anderson (2016: 1–26); Smithers (2019); Loubser & Ashcraft (2020: 247–69).

<sup>10</sup> Aftandilian (2011: 192).

<sup>11</sup> Wolfe quoted in Kays (2015).

<sup>12</sup> Similar philosophies exist throughout Native America. See Umek (2004: 17, 71); Duncan (1993).



**Figure 1.** Eighteenth-century Cherokees located their towns and farms along rivers and the watersheds of southern Appalachia. Map by Erin Greb Cartography.



of Cherokee history and culture: the importance of water stories to TEK and the role that these narratives have played, and can continue to play, in ensuring healthy biomes and in meeting the challenges of climate change.<sup>13</sup> TEK is a body of environmental knowledge developed, adapted, and innovated by Native American people for at least 16,000 years.<sup>14</sup> It is knowledge refined through close observation of environmental cycles, experimentation, and adaptation. It is also knowledge that is shared among the members of kinship communities through stories and practical engagement with local ecosystems.<sup>15</sup> In other words, TEK is Indigenous scientific and spiritual knowledge; it is law and lore that Cherokee ancestors used to enhance the biodiversity of their homeland.<sup>16</sup>

TEK is part of a holistic, moral, and spiritual worldview, an aspect of Indigenous knowledge that Western scientists have either dismissed or written off as irrelevant to the serious work of empirical knowledge making – the recording and publishing of ‘hard’ scientific facts.<sup>17</sup> In the current era of climate crisis – or the Anthropocene era, characterised by the ‘great acceleration’ in humanity’s impact (most notably in the form of increasing carbon emissions) on global climate systems since the 1940s<sup>18</sup> – there is too much at stake to maintain such rigid positions. We need to decolonise environmental science, our knowledge of ‘deep time’ (or ‘geological time’), and climate history, if we are to ask the right questions, and devise the best solutions, to ensuring sustainable climate futures.<sup>19</sup>

The United Nations has recognised the potential impacts of human-induced climate change on the world’s Indigenous people. The UN’s Department of Economics and Social Affairs makes it clear that ‘Indigenous peoples are among the first to face the direct consequences of climate change’.<sup>20</sup> The UN Declaration on the Rights of Indigenous Peoples (UNDRIP) adds that Indigenous communities must be involved in decisions pertaining to water. Such governance must include consultation and co-management with Native nations on fisheries and watersheds, recognition of the rights of rivers (as occurred in New Zealand with the legal acknowledgment of the personhood of Te Urewera, or the Whanganui River), and the cultural and spiritual significance of rivers (as outlined by First Nations communities in Australia with the

<sup>13</sup> Loftin & Frey (2019: 83–98).

<sup>14</sup> The latest scientific consensus contends that Native Americans were living in the Americas by c. 15,000–16,000 years ago. See Braje *et al.* (2017: 592–94).

<sup>15</sup> Berkes (1993: 1–9).

<sup>16</sup> Martin (2019: 36–57).

<sup>17</sup> Berkes (1993: 4); Berkes, Colding, Folke (2000: 1251–62); Moller *et al.* (2004).

<sup>18</sup> McNeil & Engelke (2014).

<sup>19</sup> Peña (2019: 276–99); Emmanuel & Wilkins (2020: 1–37).

<sup>20</sup> United Nations, Department of Economic and Social Affairs (2020).

incorporation of ‘cultural flows’ into protocols for the co-management rivers).<sup>21</sup> Such changes in water and river co-governance are needed now; they also underscore the importance of Indigenous sovereignty to ensure that transparent consultation practices with non-Indigenous governments are adhered to and effectively meet the challenges of climate change. As a recent study by an international team of scholars reveals, time is running out. If human behaviour remains unchanged, it may only take five generations to reach levels of greenhouse gas emissions and global temperatures similar to those of the Paleocene-Eocene Thermal Maximum (PETM) – ‘hothouse earth’ of *c.* 56,000 years ago.<sup>22</sup> Interdisciplinary histories and co-management strategies on climate change adaptation, watershed biodiversity, and the resilience of rivers are urgently needed.<sup>23</sup> High in *Shaconage*, among the river cane and the cool flowing waters at the centre of Cherokee life, we can follow the lead of Cherokee knowledge keepers and draw wisdom from the deep history of the mountains, and their changing climates, to start planning for a more ethical and resilient climate future.<sup>24</sup>

### Deep time meets spiritual time

Cherokee environmental philosophies emphasise the interconnectedness of human and nonhuman life. This is a spiritual as well as scientific worldview. In fact, traditional Cherokee knowledge keepers view the physical and spiritual worlds as interconnected. Cherokee stories give ecological and geological philosophies their meaning by firstly emphasising the vertical connections among the Upper World (*Galunlati*), Middle World, and Under World. The cycles of time – from ‘origins’ to ‘the now’ – are woven together in these interconnected worlds. Cherokees with special training and knowledge, such as shamans or medicine people, were once thought to possess great powers and could access these different realms through gateways, usually located in caves, waterfalls, whirlpools, and river bottoms. For example, gateways to the Upper World took one to knowledge possessed by deceased human and animal spirits. In the Middle World, all living spirits, including humans, resided. And in the Under World there existed great power and also immense danger, for this was the domain of evil spirits and horned serpents.<sup>25</sup>

Balancing these three interconnected worlds constituted a daily obligation and a sacred duty. Overhunt the whitetail deer, pick too many strawberries, fail to observe

<sup>21</sup> Lurgio (2019).

<sup>22</sup> American Geophysical Union (2019).

<sup>23</sup> Sherwood *et al.* (2020).

<sup>24</sup> Hill (1997: 316).

<sup>25</sup> Irwin (1992: 237–57); Fradkin (1990: 292–93); Altman (2006: 67); Loftin & Frey (2019: 87).

sacred ceremonies, or pollute a river, and Cherokees risked destabilising their worlds. The members of traditional Cherokee communities viewed a prolonged drought or an earthquake as physical signs of a world out of balance.<sup>26</sup> By the time the Spaniard Hernando de Soto led the first European invasion through Cherokee country in the Spring of 1540, Cherokees had nurtured these geological, ecological, and historical worldviews in their watershed towns and among clan members for ‘time immemorial’.<sup>27</sup> Guided by their town and clan identities, Cherokees build on the knowledge of their ancestors and renewed their environmental philosophies over thousands of years of observation, experimentation, innovation, and connection to place.<sup>28</sup>

Historians usually view the Cherokee people as mountain dwellers who embedded their identities in the landscape.<sup>29</sup> That is true, but it tells us only part of the story of the Cherokee people, their ancestors, and their place-based identities and philosophies.<sup>30</sup> To get a fuller appreciation of this history we need to understand the dynamic nature of Cherokee philosophy and how Cherokee knowledge systems were, and are, shaped by their deep history as watershed dwellers.

Rivers and watersheds were, and remain, the lifeblood of Cherokee history and culture. For at least 8,000 years, the Cherokees and their paleo-Indian ancestors located towns and base camps in caves or at the headwaters of rivers.<sup>31</sup> These rivers included the Oconaluftee, Cheoah, Soco, Tuckasegee, Tennessee, Little Tennessee, Hiwassee, and many others. Cherokee TEK holds that flowing rivers are alive. In 1791, the botanist William Bartram observed that the waters of Cherokee Country flowed from the mountains and ran ‘rapidly’ downstream to the fields below.<sup>32</sup> Cherokees acted as riverkeepers to these fast-flowing waterways, ensuring that the shifting riverbanks and seasonal floods nourished the watershed landscapes they lived with. Cherokees therefore kept a close watch on the health of the rivers, rivulets, creeks, whirlpools, waterfalls, shoals, and rapids – all teeming with biological and spiritual life. For Cherokees, whose population ranged from a high of approximately 35,000 in the late 17th century to about 16,000 by the early 19th, flowing rivers irrigated crops and helped Cherokees nurture biodiversity in landscapes that were transformed from

<sup>26</sup> Aftandilian (2011: 191–207).

<sup>27</sup> Traditional Cherokee society comprised seven matrilineal clans. Although Cherokees understood the Western concept of linear time, their knowledge systems emphasised the cyclical nature of time/seasons. Hence, specificity of dates was folded into, and subsumed by, an emphasis on the cyclical nature of time. The ‘past’, in a Western sense of ‘history’, was often spoken about as ‘time immemorial’.

<sup>28</sup> Lawson (1709); Adair (1775); Bartram (1791); Perdue (1998: 170).

<sup>29</sup> Hatley (1995: 13); Thornton (1990: 25); Perdue & Green (2007: 10).

<sup>30</sup> Fogelson (1989: 133–47, and espec. 140); Debo (1934: 110).

<sup>31</sup> Kehoe (2017: 13, 25).

<sup>32</sup> Bartram (1791: 278).





**Figure 2.** The Oconaluftee River begins life high in the Appalachians at Newfound Gap near the Tennessee-North Carolina border. It flows westward and eventually connects with the Tuckasegee River. The cool, shallow waters of the 'Luftee' flow through the centre of the Qualla Boundary, home to the Eastern Band of Cherokee Indians. Photograph by author.



closed canopy deciduous forests during the early Holocene to a mosaic landscape by the late Holocene.<sup>33</sup>

Waterways also connected Cherokee people. Prior to European colonisation, Cherokee country was geographically diverse and ecologically dynamic. It included parts of modern-day Tennessee, Mississippi, Georgia, South Carolina, North Carolina, Virginia, West Virginia, and Kentucky. The waterways that connected Cherokee towns and irrigated crops sprang to life in the mountains. Winter snow covered domed peaks and cool microclimates sustained boreal forests of pine and spruce among mountains that reached over 6,500 feet above sea level. Cherokees viewed these higher elevations as sacred places, while at the lower elevations they built communities, hunted, and experimented with cultigens throughout the Appalachian Plateau, the Interior Low Plateau, and the Piedmont region. Fast-flowing rivers and streams sliced through a landscape which included open parklands and hickory-oak forests.<sup>34</sup> The Cherokees watched, listened, and worked with these different ecosystems. Some used cool, slow-burning fires to clear underbrush and encourage seed germination. Men constructed weirs and stone fish traps in the shallows of rivers and rivulets.<sup>35</sup> Women and children walked through sumptuous landscapes picking strawberries, collecting seeds and nuts, and harvested wild onions (ramps) and mushrooms. The most skilled and knowledgeable women experimented with cultigens on the rich soils of the Appalachian Plateau – notably the three sisters of beans, corn, and squash – and crops such as peaches and sweet potatoes that arrived with European colonisers and enslaved Africans. Cherokees did all of this not to commodify and claim possession over the landscape and rivers, but to constantly renew their commitment to living in balance and harmony with local ecosystems. Nurturing Native ecologies and enhancing regional biodiversity involved an ongoing and dynamic set of practices and horticultural adaptations.<sup>36</sup>

Origin narratives reminded Cherokees that adherence to the harmony ethic required vigilance, introspection, and a willingness to adapt to the seasonal cycles. This meant that innovation was vital. When local ecologies showed signs of strain, older forms of knowledge were built on and rewoven into new stories. This dynamism in storytelling traditions underscored the reciprocal relationship that Cherokees felt they had entered into with the life and spirits of their homeland.

<sup>33</sup> Wood (2006: 58, 89); Smithers (2015: 28).

<sup>34</sup> The Hickory-Oak forests predominated these lower elevations from about 8,000 years ago. Delcourt *et al.* (1985: 1–28).

<sup>35</sup> Fesenmyer & Christensen Jr. (2010: 662–70); Yarnell (1998: 8).

<sup>36</sup> Bartrum (1791: 48; Lawson (1709: 55, 78, 178); Brickell (1737: 17); Davis (2000: 47–50); Smithers (February 2019: 265–90).

The land and the rivers also carried memories. Cherokees made a point of listening to the stories that the earth shared with them. Sometimes, the stories Cherokees heard contained warnings. To overhunt, to misuse food staples, or to pollute waterways with human waste risked falling short of the Cherokees' responsibility to keep the cosmos in balance. Failure was not an option. As Cherokees taught Mooney, 'when the world grows old and worn out, the people will die and the cords will break and let the earth sink down into the ocean, and all will be water again'. The Cherokees, Mooney wrote, 'are afraid of this'.<sup>37</sup>

### Before *Shaconage*

Human history at *Shaconage* is short. Evidence of human interaction with the biosystems of southern Appalachia date back a mere 12,000 years – the blink of an eye in geological time. Still, Cherokees have a long history of respecting the earth's agency and looking for clues about its pre-human past. Cherokee Elder Freeman Owle reminds us of this, instructing 'that if you're quiet enough, still enough, long enough, that you become part of nature'.<sup>38</sup> That is exactly what small bands of hunter-gatherer ancestors did, people known to archeologists as paleo-Indians, when they hunted, foraged, and made lives for themselves in these mountain ecosystems. We have no record of what these small communities called themselves, but we do know that throughout southern Appalachia the paleo-Indians established base camps in caves to facilitate hunting. Unlike paleo-Indians in other parts of North America, the people of *Shaconage* did not hunt the megafauna typically associated with this time period. Instead, they crafted fluted projectile points and hunted small game such as deer, birds, and fish.<sup>39</sup>

The paleo-Indians began adapting human life to the ecosystems of southern Appalachia after the last glacial maximum peaked around 18,000 years ago. Ice sheets that once reached as far as modern-day New York on the Atlantic coast and stopped just north of Cincinnati, Ohio, began to slowly recede over the following 10,000 years. As the ice retreated, the paleo-Indians began inhabiting the mountains of southern Appalachia. Between 12,000 and 8,000 years ago, life for small bands of Native people looked very different from the types of agricultural communities that eventually developed in Cherokee country in the centuries after 800CE.

<sup>37</sup> Mooney (1992: 239).

<sup>38</sup> Duncan (2008: 57).

<sup>39</sup> Tankersley (1990: 73–142); Chapman (2014: 38–41).

*Shaconage's* story is much deeper than its human history. It extends into the mists of the geological past and is part of the earth's sensitive climate history. This deeper history begins on the Precambrian supercontinent, a world in which ocean salinity was 1.5. to 2 times greater than it is today, and stromatolites ruled supreme. These soft-bodied, layered mounds transformed a planet filled with poisonous greenhouse gases by pumping life-sustaining oxygen into the earth's atmosphere.<sup>40</sup>

About 750 million years ago the Precambrian supercontinent Rodinia thinned and began pulling apart. These shifts in the earth's crust exploded around 540 million years ago. Volcanoes burst to life, spewing molten rock and a chemical cocktail of sulphur dioxide and greenhouse gasses (like carbon dioxide) into the atmosphere. Volcanic activity shaped the formation of the Appalachian Mountains, the same peaks that Cherokees later associated with great serpents such as *Uktena* and *Ustutli*. Cherokees spoke about the power of these serpents and their ability to navigate rivers and ravines. These ancient serpents reminded Cherokees of the power held within the mountains – the location of the headwaters of the rivers that brought their crops to life.<sup>41</sup> Archaeologist also tell a story about the power of these mountains, albeit a drier tale involving measurements of earth's migrating sediments and shifting layers. They observe that shifting tectonic plates continued the violent migration of the earth's continents and caused splits in the earth's crust. When water poured into low-lying areas between crustal plates, multicellular animal life began emerging. The Cambrian period had burst to life.<sup>42</sup>

Paleoarchaeologists contend that the formation of the mountain landscapes and watersheds that eventually became home to the Cherokee people sparked a global ice age.<sup>43</sup> But if paleoarchaeology teaches us anything it is that the earth's climate history is dynamic. The biodiversity of the Appalachians evolved as the pieces of the geological world continued their migrations. Long before the famous supercontinent Pangaea formed around 250 million years ago, the rocks at the core of the southern Appalachian Mountains had already been set in place.<sup>44</sup> However, a deep basin, known as the Ocoee Basin, also formed. It carried vast quantities of clay, silt, sand, and gravel-like deposits as far as the Gulf of Mexico. Hitching a ride on fast-flowing sheets of water, these torrents of surface water began at the highest elevations. In Cherokee stories, these high peaks became the home to serpents like *Uktena* and contributed to the formation of the rivers and fertile soils that Cherokees ultimately used to irrigate crops and enhance the biodiversity of their watershed towns.<sup>45</sup>

<sup>40</sup> Torsvik & Cocks (2017: 84).

<sup>41</sup> Mooney (1992: 299, 303); Chapman (2014: 19, 21, 30).

<sup>42</sup> Walker (1990: 261–89); Casting (2005: 119–29); Sheldon (2006: 148–55).

<sup>43</sup> For a summary of this scholarship see Minkel (2006).

<sup>44</sup> Pangaea formed during the Permian epoch, an epoch that ended with a mass extinction event of global scale.

<sup>45</sup> Montgomery & Bilke (2016).

Before this, at about the time the Appalachian Mountains tripped the world into an ice age, something else was going on. It began approximately 450 million years ago when a climate stalemate gripped the planet. Again, the Appalachian Mountains were at the centre of this drama. Scholars of earth's history have pointed to a paradox: cooling temperatures that precipitated an ice age on one hand, and on the other hand, rising CO<sub>2</sub> levels that sparked a mass extinction event among marine species.<sup>46</sup> The paradox is partly explained by volcanic activity spewing greenhouse gases into the atmosphere and rapidly increasing the temperature of sea water as the Atlantic Ocean continued expanding.<sup>47</sup> At the same time, the weathering of the Appalachian Mountains acted as a carbon sink as rocks and forests absorbed greenhouse gasses and cooled air temperatures. It was an environmental tug-of-war, made possible in part by the Appalachians location in a warmer and wetter part of the world known as the tropical rain belt. The Appalachians lush tropical ecosystem and the weathering of its rock faces produced that carbon sink, sequestering climate warming greenhouse gases. However, as the continents continued drifting and pulling apart, the Appalachians migrated out of the tropical rain belt – reducing their carbon sequestration capacity – and moved slowly toward the geographical position that Native Americans, and ultimately European colonisers, found them.<sup>48</sup>

That geological and environmental world still lay far into the future at the start of the Mesozoic era. Beginning between 266 and 252 million years ago, the Mesozoic saw warmer oceans and fluctuating sea levels. Marshland was not as common as deserts, and air temperatures were generally warmer, sometimes tropical. In the Mesozoic world, ferns were commonplace, small mammals foraged for food, turtles ambled over the landscape, and new vertebrate groups that resembled the powerful serpents of Cherokee oral tradition emerged: the dinosaurs.<sup>49</sup> By the Triassic Period, Pangaea experienced hot summers, its vast interior comprising mostly desert, while monsoon rains flooded coastal plains. The earth between 251–199 million years ago was also a world of stony corals, lizard-like reptiles, and giants like the 16-foot long *Prestosuchus chiniquensis*. Hardy ferns continued flourishing, and at higher latitudes, conifer forests soared above the Appalachian Mountains like ancient skyscrapers.<sup>50</sup>

But the earth is nothing if not ever changing; its pulses opening new epochs of ecological change that demand adaptation. As the Atlantic Ocean continued to widen and alter global ocean currents between 200,000 to 170,000 million years ago, Europe,

<sup>46</sup>This is referred to as the Ordovician mass extinction of *c.* 445 million years ago. Sutcliffe *et al.* (2000: 967–70); Sheehan (2001: 331–64).

<sup>47</sup>Bartlett *et al.* (2018: 5896–901).

<sup>48</sup>Macdonald *et al.* (2019: 181–84).

<sup>49</sup>Philander (2012: 918); Summerhayes (2015: 63–65).

<sup>50</sup>Philander (2012: 1357); Vakhrameev (1991: 243–46); Tanner (2018: 59–90).



Africa, and North America migrated apart. South America eventually follow the northern half of the Americas, and between 100,000 to 50,000 million years ago the continents took the rough shape and location that most of us are familiar with today. The continents, though, are never paused for long. They continued to move during the Jurassic epoch (c. 145 million years ago), and the Cretaceous (c. 65 million years ago).<sup>51</sup>

These processes – or geological history – are measured in millions, not tens or hundreds, of years. The southern Appalachian Mountains that the Cherokees associated with such beauty and power emerged out of this geological history. Cherokees have long known that *Shaconage* has a story of its own, an agency that played an important role in the planet's climate history. The stability of the seasonal cycles that eventually characterized the Holocene (from c. 11,700 years ago) throughout Appalachia operates on a relatively predictable timeframe that is based on the earth's eccentricity, obliquity, and precession cycles. These cycles are collectively referred to as the Milankovitch Cycles, so named for the Serbian geophysicist, Milutin Milanković.

The Milankovitch Cycles adds another layer to more nuanced understandings of glacial and interglacial epochs in earth's climate history. These cycles focus our attention on the rotation, tilt, and wobble of the earth as it rotates around the sun, and the eccentricity, or amount of solar radiation, that the earth receives from the sun on a 100,000-year cycle of the earth's orbit around the sun in either a circular or elliptical orbit. Obliquity occurs on a 41,000-year cycle and refers to the tilt of the earth. Over the cycle, the earth tilts between 24.5 degrees and 22.5 degrees, the former placing the northern hemisphere closer to the sun. Finally, precession takes place on a 26,000-year cycle. Precession refers to the wobble of the earth and can contribute to much cooler winters and hotter summers.<sup>52</sup>

Understanding the Milankovitch Cycles and mapping the impact of continental drift provides a framework for identifying the natural cycles of the earth's climate systems. It also provides a deeper, albeit macrolevel, understanding of climate change based on insolation (or solar radiation received from the sun).<sup>53</sup> For the Cherokees and their ancestors, observing these cycles and the impacts they had on southern Appalachian biomes were fundamental to the balance and harmony of daily and spiritual life. Climactic observations became the basis for Cherokee science and

<sup>51</sup> Vakhrameev (1991: 54); Hubbard (1988: 49–72); Cloudsley-Thompson (2005: 9); Saidi *et al.* (1997: 198–208).

<sup>52</sup> Bennett (1990: 11–21); Muller & MacDonald (2000: 11, 136, 270). The Milankovitch Cycles have raised debates about environmental determinism. A 2012 review of this literature suggested understanding macrolevel dynamics in earth's climate remain vital to grasping their localised impacts. See Campisano (2012).

<sup>53</sup> Priest & Forbes (2002: 313–77); Carlowicz & Lopez (2002).

ecological knowledge, an accumulated body of knowledge that continues to guide the Cherokee peoples' stewardship of their ancient and ever-changing mountain landscapes and waterways.

### Indigenous knowledge keepers

When the Cherokees began living with the watersheds of southern Appalachia, they inherited a world previously bordered by the Atlantic Ocean in the east and the warm waters of a massive inland sea to the west. The Western Interior Seaway once divided North America between Laramidia in the west and Appalachia in the east. When the Rocky Mountains formed in North America's west between 80 million and 55 million years ago, this enormous sea began receding and ultimately dried-up at the end of the Cretaceous (*c.* 66,000 years ago). The draining of the Western Interior Seaway revealed lands that we know today as the Great Plains and the states of the Gulf South.<sup>54</sup>

This deep history of major environmental changes and geological formations is today embedded in rock, sediment, and soil. Some of it now lies under roads, cities,



**Figure 3.** Historic postcard of Judaculla (or *Tsul Kalu*) Rock. Author's collection.

<sup>54</sup> Kauffman (1984: 273–306); Hay *et al.* (1993: 297–318).

and dams that flooded ancient rivers. But before the physical structures of settler colonialism were built on the North American landscape, the Cherokee's ancestors tried to comprehend the geological and environmental secrets of their world. Their ancestors saw mountains populated by thick wooded forest. Cherokees also read the rocks and imprinted their own stories on the landscape by rendering petroglyphs – such as those at Judaculla (or *Tsul Kalu*) Rock in Jackson County, North Carolina – on cave walls and rockfaces.<sup>55</sup>

Eventually, Cherokees constructed towns and tended farms, thereby living with the layers rocks, sediment, and mineral deposits – copper, zinc, iron, and sulfur – and the bones of long deceased dinosaurs. Appalachia's weathering occasionally revealed the remains of Jurassic monsters. Some of these long-deceased creatures included those who flew above the mountain peaks, such as the toothy sea-bird *Ichthyornis*, or walked atop the landscape, such as the fearsome *Lophorhothon*, a duck-billed giant who grew to thirty-six feet in length.<sup>56</sup>

Faint outlines of creatures resembling the giants of the Triassic Period populate Cherokee stories. By living with the land and waterscapes of Appalachia over thousands of years, the Cherokee people made sense of these remains by weaving them into their origin stories and developing a holistic understanding of a world filled with beings and spirits that inspired awe, fear, and wonder. Traditional knowledge was both cumulative and innovative. Elders shared this knowledge with future knowledge keepers. They did so fully aware that to keep traditional knowledge alive it must not remain static; it must build on the philosophies of the ancestors by evolving with the biomes they shared with other living spirits.

For the Cherokees, storytelling is alive with meaning because the geology and environment of their homeland is alive. Cherokee storytellers constantly add new layers of insight to their ecological knowledge as observation, investigation, and speculation encourages new stories. Cherokee storyscapes recount tales of monsters that resemble earth's Triassic occupants, spirits (both good and bad), and *yvwi tsunsdi* (the little people) that helped past generations of Cherokees make sense of changes in the biosphere. Among the most important of the Cherokee's narrative traditions were water stories, tales that connected worlds both physical and spiritual, past and present.

Throughout the Southeastern culture zone, water stories flowed through traditional philosophies. All of the Five Nations – the Cherokees, Creeks, Seminoles, Choctaws, and Chickasaws – and smaller Native polities viewed water as central to their everyday

<sup>55</sup>Blackmun & Williams (1977: 28–30). The Judaculla petroglyphs date to between 2,000 to 3,000 years ago.

<sup>56</sup>Olson (1985: 91–2); Fastovsky & Weishampel (2005: 211–15); Chatterjee (2015: 152).

lives and their spiritual wellbeing. These sovereign communities inherited stories, ceremonies, and use-practices stretching back to the paleo-Indians.<sup>57</sup>

For example, Muskogee-speaking people wove water into their language, their sense of place, and their worldviews. The *este maskoke* – the Muskogee people, or ‘people of the swampy ground’ – lived in what are today the states of Alabama and Georgia. Here they shared origin narratives of a primordial world covered by water and formed a decentralised confederacy with Indigenous peoples such as the Hitchitis, Yuches, Cowetas, and many others during the 17th century.<sup>58</sup> Most people clung so closely to the rivers and creeks of the region that English colonisers referred to them as ‘Creeks’.<sup>59</sup> Although ‘Creek’ is a colonial term that detracts from the linguistic and cultural diversity of the 17th- and 18th-century Creek people, it nonetheless underscores the importance of rivers and watersheds to the communities who formed the Creek Confederacy.<sup>60</sup>

The importance of water is evident in the Muskogee language. The Muskogee word *hacci*, for instance, is used as a noun to indicate a river, while *oki* refers to water.<sup>61</sup> Words prefixed with *ak-* indicate ‘in water’ or ‘in liquid’. Muskogee words also represented a river’s characteristics and can give a town its name. For example, *Wawautumcau* refers to the ‘rumbling waters’ along the Coosa River. European colonisers called this section of the river the shoals of the Coosa. Such traditions continued throughout the 18th century and beyond. The Creek town of Okmulgi, located along the Ocmulgee River, highlights how Native Southerners used rivers and water stories to characterise their towns and navigate their homeland. Okmulgi, for instance, translates as ‘bubbling or boiling water’.<sup>62</sup>

One of the Cherokees other neighbors, the Catawbas, also nurtured water stories and looked to rivers to define their collective identity. The Catawbas became a prosperous Indigenous community in the Piedmont region of North Carolina and South Carolina during the 17th and 18th centuries. The rivers of the Piedmont determined where Catawbas constructed their villages, located their council houses, and planted their crops. Catawbas, like Cherokees, paid close attention to seasonal cycles and

<sup>57</sup> Kehoe (2017: 13).

<sup>58</sup> Swanton (1922: 215–82); Jenkins (2009: 236); Ethridge (2003: 28); Oatis (2004: 56); Aftandilian (2011: 194).

<sup>59</sup> Early English colonisers referred to Muskogee people ‘living on Ochese Creek’, a tributary of the Ocmulgee River, near modern-day Macon, as the Ochese Creek. The English later shortened this to simply ‘Creek’. See Hahn (2004: 6). Note also that the English did not identify the Ochese people as living *with* the land and water, but ‘on’ it. This is a colonial worldview that ultimately justified the dispossession of Native Southerners.

<sup>60</sup> Saunt (1999); Hahn (2004).

<sup>61</sup> Gatschet (1884, I: 60); Martin & McKane Mauldin (2000: 57).

<sup>62</sup> Ethridge (2003: 33).





**Figure 4.** A rare archaeological find, a canoe unearthed in Cherokee country and housed at the Tennessee Division of Archaeology, Nashville, Tennessee. Photograph by author.

watched and listened to the flow of the rivers. Reflecting the centrality of water in Catawba worldviews, they referred to themselves as *Ye Iswa*: the ‘river people’.<sup>63</sup>

Native Southerners looked upon rivers as gateways not only to other worlds but to neighboring polities. Indeed, waterways connected communities in trade, diplomacy, and cultural exchange. While water was shared, it sometimes became a source of disagreement and even warfare. Using the rivers in these different ways required a reliable means of transportation: pirogues and canoes.

pirogues and canoes served a variety of functions. In the 1540s, Spanish conquistadors observed the painted and canopied pirogues that transported chiefs and Elders along the Southeast’s rivers.<sup>64</sup> Among the Cherokees, skilled craftspeople hollowed out the trunks of large poplar trees to fashion canoes that transported people to hunting grounds and diplomats to council houses. Cherokee fishermen also used canoes. Before taking their canoe to water, fishermen would pray to *Yun’wi Ama’yine’hi*, or the ‘water-dwelling people’, to ensure a good catch.<sup>65</sup>

For Cherokees and their Indigenous neighbors, rivers were more than transportation thoroughfares; rivers told stories. The water that flowed through rivers sustained, cleansed, and renewed life. However, like human life, the life of a river needed to be cared for. Cherokees needed to read the river to ensure that the watershed homes of their kin remained in balance and harmony with the local ecosystem. Signs of disharmony needed to be guarded against, a principle that the story about the four cords Mooney learned about in the 1890s reminded Cherokees of. Those cords represented the cardinal directions – north, south, east, and west – and lifted the mountain peaks toward *Galunlati*. Cherokees elaborated on their geo-environmental philosophies by telling stories that also included the directions of up, down, and centre, thereby creating a narrative reminder of the sacredness of the number seven, and, importantly, the fragile tapestry of earth’s geological and climactic life.<sup>66</sup>

Water also helped Cherokees map southern Appalachia. Just as the sound and flow of a river acted as an auditory compass for traveling Cherokees, so flowing rivers carried deep cultural meaning. Rivers were alive, they were precious, and they had personalities. The anthropomorphic qualities associated with waterways is clearest in the way Cherokees traditionally referred to rivers as *yvwiya gunahita*, the ‘long person’.<sup>67</sup> This nomenclature reflects a central pillar of water stories and ecological knowledge in Cherokee culture: rivers have wisdom, they have consciousness, and if

<sup>63</sup> Speck (1939: 404–17); Brown (1968); Savage Jr. (1956: Chapter 3).

<sup>64</sup> Shipp, ed. (1881: 354–55).

<sup>65</sup> Mails (1992: 39); Mooney (1992: 496, 547); Camuto (1997: 180).

<sup>66</sup> Duncan (2008: 11).

<sup>67</sup> Duncan (2008: 5).

humans are silent and listen, rivers teach people important lessons about the health of a river and the ecosystems they irrigate.

Cherokees water stories explain the origins, health, and ecological importance of rivers. One of the most important of these living histories is that of *Kanane'ski Amai'yehi* (the Water Spider) and 'The First Fire'.<sup>68</sup> This story emphasises the importance of cooperation and the roles that fire and water play in cleansing and renewing life.

There are a number of versions of *Kanane'ski Amai'yehi* and 'The First Fire', but the moral is essentially the same. In a scene resembling earth's last major ice age, the story begins at a time when there is no fire. Everyone, and everything, was frozen. The animals, birds, and insects all tried to find a way to bring warmth to their world. Then, *Ani-Hyuntikwalaski* (the Thunderers), a powerful clan of storm spirits that take on human form and inhabit the Darkening Lands in the west, sent lightening to the bottom of a hollow sycamore tree at the centre of a mythical island.<sup>69</sup> The glowing fire and billowing smoke alert the animals – raven, the screech owl, the horned owl, the hooting owl, little blacksnake, the great blacksnake, and others – that *Ani-Hyuntikwalaski* has ignited fire. The Wolf suggests that this fire, 'as warm as the sun', might bring warmth and light to their land. A council is called, and the decision is made to bring fire back from the island. The animals, however, all fail in their efforts to acquire fire.

Downcast, but still determined, a new council is convened. Out of this meeting, Water Spider weaves a bowl out of her own thread and volunteers to go to the island to retrieve a coal of fire. *Kanane'ski Amai'yehi* crosses the waters to the centre of the island, obtains a single piece of coal, and successfully returns to share fire with the other animals. This story taught the Cherokees the value of cooperation and consensus; it also reminded them of the impact that they could have on their physical environment and the sacrifices needed to balance the ecological wellbeing of a community. Every Cherokee council house had a hearth at its centre, and those who reenacted *Kanane'ski Amai'yehi's* sacrifice by reignited the sacred fires within the council house performed what Cherokees considered a sacred duty.<sup>70</sup>

Fire brought warmth and light to the world, a technological breakthrough that required the animals to cross a body of water. This was not an uncommon motif in Cherokee water stories. Heroic migration narratives and tales of beings – or what anthropologist A. Irving Hallowell referred to as 'other than human persons' – plunging into the earth through caves or diving into the Underworld via whirlpools, remain

<sup>68</sup> Isaacs (2019: 46, 246).

<sup>69</sup> This 'island' might be read as 'Appalachia', the land between the Atlantic Ocean and the inland sea.

<sup>70</sup> Mooney (1992: 240–2).

part of Cherokee oral traditions today.<sup>71</sup> During the 18th and 19th centuries, Cherokees viewed flowing waterways as gateways to the underworld and the domain of Triassic-like creatures such as the horned-serpent Uktena, whose blood, if spilled, had the power to flow down-stream, darken the water, and sicken those who drank from it.<sup>72</sup> Alternatively, flowing waterways possessed the power to cleanse. However, the story of Uktena served as a reminder that Cherokees lived in a delicately balanced, interconnected world; any disruption to that balance risked the world becoming unhealthy (or unbalanced). People needed humility, altruism, and they always needed to remember their obligations to community. The story of the Aní-Kutánî underscores this communal ethos.

Cherokee oral traditions tell of the Aní-Kutánî traveling a great distance before reaching southern Appalachia.<sup>73</sup> Sometimes referred to as the eighth Cherokee clan, the Aní-Kutánî comprised an ancient priesthood who are said to have migrated from an island once located at the centre of the Atlantic Ocean.<sup>74</sup> The Aní-Kutánî were also thought to possess great power due to their knowledge of sacred medicine. These medicines relied on an intimate knowledge of different plants and herbs. The Aní-Kutánî, however, misused their power. They became selfish, self-indulgent, and abducted Cherokee wives. A Cherokee civil war ensued, eventually resulting in the defeat and banishment of the Aní-Kutánî, but not before the ancient priesthood cursed the Cherokees by unleashing a powerful form of witchcraft among them.<sup>75</sup>

Water flows through the retelling of the Aní-Kutánî narrative – from the legend of their migration to the use of water in preparing sacred medicines – just as it exists in scores of other oral traditions. In Cherokee ecological knowledge, water is part of an oral, spiritual, and performative library that archives knowledge and connects spiritual places to local ecosystems. Generation after generation of Cherokees view water as medicine, the responsibilities they have toward it being renewed through stories and practical engagements with the riverine environment. In the early 19th century Cherokees such as Thomas Nutsawi (Deer in the Water), Thomas Smith (Shield Eater), and Thomas Pridget taught Christian missionaries their creation stories, migration narratives, and understanding of history.<sup>76</sup> Nutsawi, one of those knowledge keepers, gave the missionary Daniel Butrick an overview of Cherokee ecological

<sup>71</sup> Hallowell's (1960: 19–52) use of the phrase 'other than human persons' referred to Ojibwe oral traditions. However, his use of this phrase is applicable to Cherokee traditions. Quote is at 43.

<sup>72</sup> Mooney (1992: 253; Isaacs (2019: 78).

<sup>73</sup> Fogelson (1984: 261); Minges (2003: 74–5). See also Marriot & Rachlin (1972: 45, 179); Leeds (1996: 1–3); Lauter (2004: 60).

<sup>74</sup> It should be noted that other Southeastern tribes shared with the Cherokee a belief in ancient migrations, often occurring over vast and treacherous stretches of water. See DeRosier Jr. (1970: 7); Brescia Jr. (1985: 6–7); Folsom (2004: 71–2).

<sup>75</sup> Fogelson (1984: 255–63); Teuton (2010: 3–6).

<sup>76</sup> Starr (1917: 38); Abram (2015: 12).



knowledge. Nutsawi told Butrick that Cherokees saw the different spheres of the cosmos as interconnected. Cherokee historical knowledge, or *agoliye*, guided the Cherokees' adherence to the principle of *gudugi*, or the concept of working together, so that communities followed the 'right path of walking or living' (or *duyvhta*).<sup>77</sup>

At a time when slaveholding interests began pushing American politicians to pass laws to facilitate the dispossession and removal of Native Southerners, Cherokee knowledge keepers worried about the disharmony that settler colonial expansion caused to the ecosystems they had long nurtured.<sup>78</sup> The settler ideal of individual landownership and private water rights represented direct attacks on the principle of *gudagi*, and the ethos of *tohi* and *osi*.<sup>79</sup> Pausing to reflect on the Cherokees long-held commitment to being good stewards of the environment, Nutsawi explained, 'Not long after the creation God directed men to build high places, on which to erect houses of worship, where they might offer sacrifices, assemble for religious instruction and perform their dances'.<sup>80</sup> He was referring to the earthen mounds upon which Cherokees constructed council houses that overlooked their watershed towns throughout *Shaconage*. These elevated places of worship were purified by water brought from the river below. Such acts, Nutsawi implied, connected the sacred mountains with the ebb and flow of rivers on the 'low ground'.<sup>81</sup>

Cherokees adapted their water stories and innovated their ecological practices to meet the challenges posed by 18th- and 19th-century settler colonialism. The continual loss of land and access to navigable rivers, especially after the American Revolution, meant the survival of Cherokee communities demanded innovation. And yet, Cherokees continued to locate their council houses, towns, and farms adjacent to flowing rivers – living water. At Red Clay, the last capital of the Cherokee Nation in the Southeast prior to the Trail of Tears, Blue Hole Spring reminded Cherokees of their links to an interconnected spiritual and physical world. The Spring's perfectly blue waters flowed into a stream adjacent to the Cherokee council house. Cherokees dipped their gourds into the flowing stream to collect drinking water. Elders did the same, while also mediating the immense powers associated with Blue Hole Spring. Cherokees believed that medicine people equipped with the appropriate spiritual training could access the underworld gateway that lay beneath the crystal blue waters of the spring.<sup>82</sup>

<sup>77</sup> Isaacs (2019: 26).

<sup>78</sup> On the political and legal history of Native American removal see Green (1982); Garrison (2002); Saunt (2020).

<sup>79</sup> On the environmental impacts of private water rights see Barlow and Clarke (2005).

<sup>80</sup> Anderson *et al.* (2010: III, 2).

<sup>81</sup> Anderson *et al.* (2010: III, 49).

<sup>82</sup> Cherokees nurtured similar stories about other underwater gateways, such as the 'haunted whirlpool' known as 'The Suck'. See Mooney (1992: 347).



**Figure 5.** Blue Hole Spring, a gateway to the Underworld. Photograph by author.



Red Clay provides an example of how Cherokees shared water stories not only by recalling oral traditions but through the locations at which they retold those stories, by drinking from nearby waterways, and incorporating local rivers and streams into ceremonies.<sup>83</sup> Ceremonial traditions, and the watershed locations of sacred places, continued to connect Cherokee people living on the ‘low ground’ to the sacred mountains long after the tragic era of removal.<sup>84</sup>

Cherokees could not avoid water stories. People even dreamed about the stuff. When dreams included visions of fish, people became alarmed. Cherokees viewed fish as liminal beings and worried that when fish appeared in a dream it foretold of bad things in the future.<sup>85</sup> In most instances, however, visions of water and rivers brought people together. Rivers reminded women about the importance of ‘coming to water’, the daily routine of walking to the local riverbank to collect sufficient water to meet the community’s needs. On other occasions, water stories combined the sacred with the mundane. For example, not far from where Shooting Creek meets the Hiwassee River, the members of a Cherokee town once prayed and fasted. At the end of their cleansing ceremony, the town’s people went down to the river. As they walked by the river’s edge, it was said that people who listened attentively and had good hearing could hear people talking under water.<sup>86</sup>

Stories of this nature reminded Cherokees of their connection to a living world. The philosophy of ecological interrelatedness is clearest in the tradition of ‘going to water’. Europeans reported seeing Cherokees engaged in ‘going to water’ ceremonies as early as the 17th and 18th centuries. ‘Going to water’ served a range of ceremonial functions. It involved Elders leading community members to the cane breaks at the banks of a river (the most sacred section of a river) to cleanse body and soul.<sup>87</sup> ‘Going to water’ could also involve Beloved Women guiding postpartum or post-menstrual women through cleansing ceremonies, or medicine people might try to identify the cause of a person’s illness and promote their healing by immersing the patient in the cool flowing waters of a local river. Most importantly, ‘going to water’ underscored the concept of interconnectedness in Cherokee epistemologies. Cherokee townspeople

<sup>83</sup> Watson (1990: 35). Cordell (1989); Jackson, (1995); D’Arcy (2006). For non-Indigenous perspectives on water, culture, and history, see Klein, (2004); Steinberg (2001); Langston (2003); Linton (2010). The Cherokee marked the yearly recurrence of the seasons with six festivals: the Great New Moon Feast, the Cementation and Propitiation Festival, the Exalting Bush, the Festival of the First New Moon of Spring, the New Green Corn Feast, and the Ripe Green Corn Feast. Mooney (1992: 232); Mails (1992: 164); Bruchac (2003: 75); Mails (2003: 37); Jastrzembski (2006: 289); Zogry (2010: 107).

<sup>84</sup> Anderson *et al.* (2010: III, 2, 49).

<sup>85</sup> Altman (2006: 70–1).

<sup>86</sup> Arneach (2008).

<sup>87</sup> Anderson *et al.* (2010: II, 99).

manifest this aspect of their ecological knowledge by gathering together in the river to bathe and to pray for a healthy and a long life.<sup>88</sup>

Cherokee folklorist, Barbara Duncan, writes that Cherokees continue to view water as a sacred, cleansing agent. More than a molecule – H<sub>2</sub>O – water possesses powerful cultural and spiritual qualities. Duncan writes, when the sun rose over a Cherokee town each morning, people gathered to sing and pray, to ‘wash away any bad thoughts or feelings. They believed water had power to cleanse the body and the spirit’.<sup>89</sup>

### Learning from Cherokee water stories

Environmental scientists like to remind us that mountains with healthy ecosystems are the worlds ‘water towers’.<sup>90</sup> Over 50 per cent of the world’s fresh water comes from snow melt and runoff from mountains. Mistreat or misuse them, and we run the risk of exacerbating freshwater shortages and stripping mountain ecosystems of their biodiversity and their ability to act as ‘carbon sinks’.<sup>91</sup>

The Cherokee people’s unbroken connection to the deep history of the southern Appalachian Mountains means they understand the importance of mountain watersheds in regional ecologies. Water stories remind Cherokees that water is finite. Indeed, Cherokee ecological knowledge highlights not only the intricate interconnections in the ecosystems of southern Appalachia, but the nourishment that mountain watersheds provide to people’s spiritual health and physical wellbeing. As Cherokee beloved man Jerry Wolfe explained in 2015, *yvwiya gunahita* ‘was called upon for strength, for cleansing, for washing away sadness, for ailments.’<sup>92</sup>

Ensuring health and wellbeing is a constant challenge. The Cherokee story of ‘The Rabbit and the Image’, a popular folktale, reminds people of the need for vigilance and cooperation because fresh water is not infinite. Rabbit is part of a trickster tradition that Native people from diverse language groups have nurtured for centuries.<sup>93</sup> In the Cherokee version, ‘The Maneaters’ respond to an extended period of drought by digging a well to collect water. Rabbit sees the well being constructed and asks, ‘What are all of you doing?’ The Maneaters, cat-like creatures who also appear in Muskogean-language narratives, invite Rabbit to help them. Rabbit declines, claiming he can get

<sup>88</sup> Adair (1775: 153–54, 164); Mooney (1900: 1–10); Duncan (1993: 94–99).

<sup>89</sup> Duncan (2008: 11). See also Lefler (2015: 159–78).

<sup>90</sup> Viviroli *et al.* (2007).

<sup>91</sup> Viviroli *et al.* (2003: 32–40).

<sup>92</sup> Kays (2015).

<sup>93</sup> Haag (2016: xxvii).



water from the dew. The Maneaters accept Rabbit's response but warn him not to take any of their water. The Maneaters feared that Rabbit would return to steal their water under the cover of darkness. Those suspicions became reality when Rabbit started stealing the well water. A trap is set up to catch Rabbit and stop his theft. Rabbit is eventually apprehended but remained defiant. He mocks The Maneaters, who in turn threaten Rabbit with additional punishments.<sup>94</sup>

Rabbit, ever the trickster, escapes, but the moral of the story remains clear: water is finite and must be shared equitably among kin and non-kin alike. Lies and theft risk warfare over access to resources which in turn magnifies disharmony in the spirit worlds and destabilises human relations. Indeed, Rabbit's defiance stands as a reminder that there are always beings unwilling to engage in cooperative and reciprocal relationships; such beings threaten the sustainability and resilience of finite resources such as water.

Other Cherokee water stories highlight similar lessons about the importance of reciprocity and sustainability. These narratives reflect the living traditions contained in Cherokee storytelling and how narrators renew a story's didactic significance by incorporating newer insights. Remember Nutsawi? In the early 19th century, he reportedly told missionaries of a time when the world became 'full of people who were very wicked. They disregarded all good instructions, and would not listen to any thing [sic] good that was said to them'.<sup>95</sup> Nutsawi's thinly veiled swipe at European colonisers echoed the biblical story of Noah's Ark, suggesting that he, like other Native storytellers, engaged in cultural syncretism to produce water stories that were meaningful to both Cherokees and European colonisers. Such syncretism was important if two groups of people with culturally distinct backgrounds were going to co-govern the environments of North America's mountain South. Water provided Nutsawi with a motif to reach across cultural divides. Nutsawi reportedly claimed that an old man was instructed by 'a certain dog' to place 'all kinds of animals' into a vessel. The old man obeyed, and shortly after closing the door on his vessel 'rain commenced, and continued forty days and forty nights, while the water at the same time gushed out of the ground, so that as much water came up, as fell down from the clouds. The wicked people could swim but little before they would sink and drown'.<sup>96</sup>

Nutsawi's syncretic rendering of a great deluge incorporated elements of biblical narratives gleaned from missionaries and incorporated them into a Cherokee-centric story about human cooperation and ecological stewardship. As Nutsawi concludes the story, 'the family saved in the ark were red'. He added, 'the Red people ... are the

<sup>94</sup> Dalala (2016: 175–76).

<sup>95</sup> Anderson *et al.* (2010: III, 6).

<sup>96</sup> Anderson *et al.* (2010: III, 6).

real people, as their name *yv wi ya*, indicates'.<sup>97</sup> Nutsawi's Cherokee forebears were a chosen people because they eschewed selfishness. Unlike the European colonisers whom Cherokees saw as *ugasalesgi* ('greedy') people, Cherokees remained true to reciprocal relationships with other humans and their more-than-human kin. This ethos empowered Cherokees to survive a grave environmental threat to their existence, something 'God' acknowledged. As Nutsawi explained: 'Long ago God made himself known to the Indians, chose them for his people, and told them they should be the father of all other nations. He also talked with some of them, and told them things to come and thus made them prophets'.<sup>98</sup>

Nutsawi's story, like the origin narratives that Mooney learned about in the 1890s, remain alive today. Cherokee knowledge keepers connect water stories to a holistic understanding of the world, renewing their commitment to long-held ecological knowledge and guiding the environmental policies and practices of the Eastern Band of Cherokee Indians. Of course, not every Cherokee can be a 'prophet', but Cherokees remain cognizant of their responsibility to live in balance and harmony with the land and waterways of *Shaconage*.

In the early 2000s, half-a-century after Western scientists identified the 'great acceleration' in human-induced climate change, Cherokee Elder Freeman Owle told folklorist Barbara Duncan that 'the Cherokee people still believe the earth has a lot to give'. Owle suggested that the earth was not yet ready to 'sink down into the ocean', insisting that the Cherokees:

still believed that it's important to take care of the waters,  
to preserve the air,  
to preserve the forest,  
to preserve the life of people themselves.<sup>99</sup>

Still living *with* the land and listening to the waterways of *Shaconage*, Cherokee people like Freeman Owle remain convinced that the old stories can guide us all to a resilient climate future.

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<sup>97</sup> Anderson *et al.* (2010: III, 10).

<sup>98</sup> Anderson *et al.* (2010: III, 10).

<sup>99</sup> Duncan (2008: 55).

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