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Creation to Rhythm: An Ethnographic and Archaeological Survey of Turtle Shell Rattles and Spirituality in the United States

Andrew Gillreath-Brown¹

Abstract. Throughout North America, from the Archaic period (ca. 8000–1000 BC) to the present, Indigenous Peoples used turtle shell rattles in a variety of cultural contexts, including in ceremonies. As a material, turtle shells can be an abundant, accessible, and easily processed raw material, whose shape and size lends itself to be a musical instrument. Many Indigenous Peoples in North America have cosmological, foundational beliefs about turtles. These beliefs provide a greater understanding of why turtle shell rattles are incorporated into ceremonies and dances. Furthermore, they help explain why they are used to keep rhythm, which in turn provides a basis for spiritual energy and experience. This paper reviews the ethnographic, ethnohistoric, and archaeological records of turtle shell rattle music in the contiguous United States. Turtle shell rattles are related to spiritual concepts of sound and are culturally defined and contextualized. A comprehensive review of their use reveals insights into the musical knowledge of several ancient and historic communities.

Keywords: turtle, rattle, ethnography, zooarchaeology, musical instruments

Introduction

The rhythm the rattle helps keep during the dance is unforgettable—something that resonates to the very soul, helping make the ceremony a spiritual experience. (American Indian Heritage Foundation 2018)

Around the world, people use rattles to produce steady rhythms in ceremonies, which are important components by which people dance and tell stories (Blades and Schechter 2001; Sachs 2012:26–28). For the Tukano of Brazil, for instance, the objects inside of rattles had power. Erich Moritz von Hornbostel and Curt Sachs (1961) classify rattles into seven categories, thereby providing a basis for understanding the variety of rattle types and their sounds. Many materials, such as gourds, iron, bronze, wood, ivory, bamboo, nutshells, baskets, turtle shells, and pottery, are used to create the rattle frame/receptacle (Blades and Schechter 2001; Morley 2003). Hard objects, such as seeds, shells, teeth, and pebbles, are used to create the rattle sound.

Ancient rattles are known across the world, such as *sistra* that were recovered from Hagios Charalambos, Crete, which date to about 2100 BC (Betancourt 2011). Terra-cotta effigy rattles were recovered from Mesopotamia that date to the early second millennium BC (Blades and Schechter 2001; Duchesne-Guillemain 1981; Simpson 1997). Rattles are used in many rituals throughout the world, including in sub-Saharan Africa, by shamans in North and South America, and Korean priests (Blades and Schechter 2001). Rattles are believed to have ritual power in many communities throughout much of the world.

Rattles are also widespread throughout North America, and are made out of many different materials, such as gourds, calabash fruit (*Lagenaria siceraria*), turtle shells, split sticks, cocoons, and pottery (Roberts 1936:21). For the Maidu Peoples, gourd rattles were part of shamanic rites (Sachs 2012:27). The context of rattles can indicate whether symbolism or the sound of the instrument were the priority. Archaeological examples of turtle shell musical

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instruments have been found throughout the world, dating to at least the last 9000 years (e.g., Both 2007; Carballo 2017; Li et al. 2003). Archaeological evidence indicates that these instruments are commonly associated with rituals and ceremonies (e.g., Both 2007; Carballo 2017:129; Li et al. 2003). In North America, in particular, Indigenous Peoples have used turtle shell rattles since the Archaic period (ca. 8000–1000 BC) as expressive percussive instruments (Gillreath-Brown and Peres 2018) and have been found in Canada and as far south as the Yucatan peninsula (Pearce 2005; Roberts 1936:21). Turtle shells are particularly important because, beyond their functional utility, they are tied to worldviews about sacredness.

In this paper, I conduct a literature review of the ethnographic, ethnohistoric, and archaeological records to compile information on the cultural importance of turtle shell rattles among 55 Indigenous Peoples in the contiguous United States. My review shows that, for many groups, turtles held a strong cultural importance, are associated with healing and connecting to nature, and are often associated with Creation Stories. Given this cultural context and that, for many groups, turtle shells were an accessible raw material, it is no surprise that turtle shell rattles were commonly used in rituals. This review also demonstrates the efficacy of combining multiple sources of data to understand the cultural context of turtle shell rattles. While ethnographic and modern accounts provide insight into interpretation, musical aspects, and various contexts of turtle shell rattles, the archaeological record provides evidence of the spatiotemporal distribution and importance of turtle shell instruments in ancient North America.

Methods

I review the ethnographic, ethnohistoric, and archaeological records to understand the significance of turtle shell rattles to Indigenous Peoples in two large geographic

regions: eastern (from Louisiana to Minnesota and east) and western (from Texas to North Dakota and west) United States. I divide my review into these major regions because of fundamental differences in rattle construction methods, creation stories with turtles, and ceremonies and rituals that use turtle shell rattles. In my regional division, I include groups based on the location of their traditional homelands rather than their current homes (e.g., the Cherokee of Oklahoma are included in the East). Ethnographic and ethnohistoric records provide spatial information on use and information on cultural meanings behind turtle shell rattles. I conducted a comprehensive review of the ethnographic data on turtle shell rattles. For the compilation of ethnographic and archaeological records, I used several resources for searching, including Washington State University library, WorldCat, Google Scholar, Google Books, Archive.org, and AnthroHub at University of California Berkeley. Turtle shell rattle references have been collected over the last nine years. The archaeological literature adds time depth and is not meant to be a comprehensive list of all known archaeologically recovered rattles. Archaeological examples were chosen to show unique geographic areas and times of turtle shell rattle usage. While this study represents the most up-to-date review on the topic, turtle shell rattles should be contextualized in individual cases.

Within the two major geographic regions, I divide the results into several headings based on a combination of ethnographic and archaeological data. These are: 1) an overview of turtles and cosmology (ethnography); 2) the construction of turtle shell rattles (ethnography and archaeology); 3) the contexts in which the rattles are used (ethnography and archaeology); and 4) turtle shell rattle music (ethnography) in the contiguous United States.

Results

In total, my sample is comprised of 120 ethnographic texts and 43 archaeological

sources. In general, my survey demonstrates that there is a widespread cosmological connection to turtles, and that turtle shell rattles are pervasive, used in a variety of contexts, and have culturally-defined importance to the 55 Indigenous Peoples discussed in this paper. The summary of the ethnographic and archaeological data can be found in Supplementary Tables 1 and 2.

Creation and the Turtle

Turtles embody importance, meaning, and symbolism for many Indigenous Peoples. For instance, among several Northeastern Woodland tribes, there is widespread belief that the earth was formed upon the back of the Turtle and, thus, among these groups, the turtle came to represent the earth-island (e.g., Fenton 1962; Miller 1974; Parker 1912:611; Pearce 2005). The concept of the turtle as the

earth-island is similar in other narratives, such as the Arapaho's (in the West) story of Blue-Feather, Buffalo-Woman, and Elk-Woman, where a boy put down a turtle shell in the middle of the mud and danced on it (Dorsey and Kroeber 1903:396), but since the turtle is the earth, he did not sink.

Different turtle species also have importance in creation stories, such as eastern box turtle (*Terrapene carolina carolina*) shell rattles (Figure 1) representing "birth/rebirth/fecundity" in the Northeast (Fox 2004:53) or that the earth is on the back of a snapping turtle (*Chelydra serpentina*) for the Iroquois (Fenton 1942:9). Since box turtles spend time on land and water, they go between the two; likewise, "the Great Turtle mediates between land and water in the Origin Myth" for the Delaware (Miller 1974:307).

In the West, turtles (and turtle shell



Figure 1. Historic body rattle. Courtesy McClung Museum of Natural History and Culture, University of Tennessee, Knoxville, Tennessee (Catalog number 2011.27.26.4). Photo by Andrew Gillreath-Brown.

rattles) were associated with creation, such as among the Hopi (James 1974:1). In California, for the eastern Sierra, the rattle is associated with the creation of land. At one time, the earth had only water, but a rattle was shaken and dirt fell out, which continued to build up, creating land (Siva 1998:32). This is similar to the origin story of the Comcáac (Seri) from the Gulf of California, which says that after *Hant Caai* ("Earthmaker") formed the earth, the Turtle brought up mud from the sea bottom to form land (Nabhan 2003:43–44, 101, 238).

Construction of Turtle Shell Rattles

Turtle shell rattles are constructed in many different ways across the contiguous United States and over time, including single turtle shell body rattles, shackles or leggings, parallel handheld rattles, and perpendicular handheld rattles (see Supplementary Table 3 for the Indigenous names of turtle shell rattles). First, single turtle shell body rattles consisted of tying a single shell to the upper arm or lower leg, and were used by at least one Eastern and four Western Indigenous Peoples (Figure 1; Supplementary Table 2; Brown 2011:Figure 12). Second, the shackles or leggings, which were used by at least 13 Indigenous Peoples in the East (Supplementary Table 2), consisted of approximately five eastern box turtle shells attached to a deer (*Odocoileus* sp.) or woodchuck (*Marmota monax*) hide, tied together, the inside filled with pebbles or beads, and then fastened to the leg, such as among the Chickasaw (Figures 2A, 2B, and 3A; Fradkin 1990:424; Gillreath-Brown and Peres 2017:Figure 1C). In the West, body rattles with one or more turtle shells usually had hooves tied to the outside, and were used by at least 13 Indigenous Peoples (Supplementary Table 2; Gifford 1940:58, 151).

Third, the parallel handheld rattle consisted of a wooden handle being inserted parallel through the shell of an eastern box, ornate box (*T. ornata*), wood

(*Glyptemys insculpta*), or snapping turtle, and were used by at least seven Eastern and three Western Indigenous Peoples (Figures 3A, 3B, 4A, and 4B; Supplementary Table 2; Voegelin 1942). Parallel handheld turtle shell rattles made from snapping turtles had several drilled holes along the outer margins so the carapace and plastron could be joined together, and rattle objects consisted of chokecherry pits or quartz pebbles (Figure 4B'; Speck 1945). Also, around AD 500–700 at Vandal Cave, Arizona, a turtle shell "was tied with yucca fiber to a worked piece of gourd" (Brown 1967:76; Haury 1936).

Fourth, the perpendicular handheld rattle consists of a wooden handle being inserted perpendicularly through the turtle shell(s), with asphaltum sometimes used to fill in gaps, and were used by at least three Indigenous Peoples in the West (Supplementary Table 2; Schneider and Everson 1989). For the Acjachemen of San Juan Capistrano, an instrument called *páail* was made up of two small Pacific pond (*Actinemys* sp.) turtle shells attached together with small pebbles inside (Harrington 1934:38).

At least eight species of turtle have been documented for rattle construction, including: eastern box turtle, snapping turtle, pond slider (*Trachemys scripta*), wood turtle, and Blanding's turtle (*Emydoidea blandingii*) for the East; and Pacific pond turtle, Mojave Desert tortoise (*Gopherus agassizii*), and painted turtle (*Chrysemys picta*) for the West (possibly in the East too [Pearce 2005:100]; see Supplementary Tables 1 and 2) (e.g., Lovich et al. 2014; Rector et al. 1983; Schneider and Everson 1989).

Rattle objects vary depending on available vegetation, as well as what sound is intended for the rattle. For example, Crouthamel (2009) lists several seeds for Luiseño gourd and turtle shell rattles, including big berry manzanita (*Arctostaphylos glauca*), constricted-seed manzanita (*A. bicolor*), Western chokecherry (*Prunus*



Figure 2. Turtle shell rattles used in Chickasaw Stomp Dance songs dancing around a fire. A – turtle shell leg shakers; B – tin can rattles. Images by Chickasaw Nation Department of Communications and Community Development (1994). All rights reserved. For permissions and other rights under this copyright, contact the Chickasaw Nation.



Figure 3. Turtle shell rattles used in Chickasaw Stomp Dance songs. A – parallel handheld box turtle shell rattle, box turtle shell leg shakers, and tin can rattles; B – parallel handheld box turtle shell rattle. Images by Chickasaw Nation Department of Communications and Community Development (1994). All rights reserved. For permissions and other rights under this copyright, contact the Chickasaw Nation.

virginiana), and California fan palm (*Washingtonia filifera*) (Harrington 1978:159). JN, Ft. Yuma Quechan, explains how to control

rattle sound by rattle objects, saying, “The contents of gourd rattles are different, depending on the song. ... different sounds

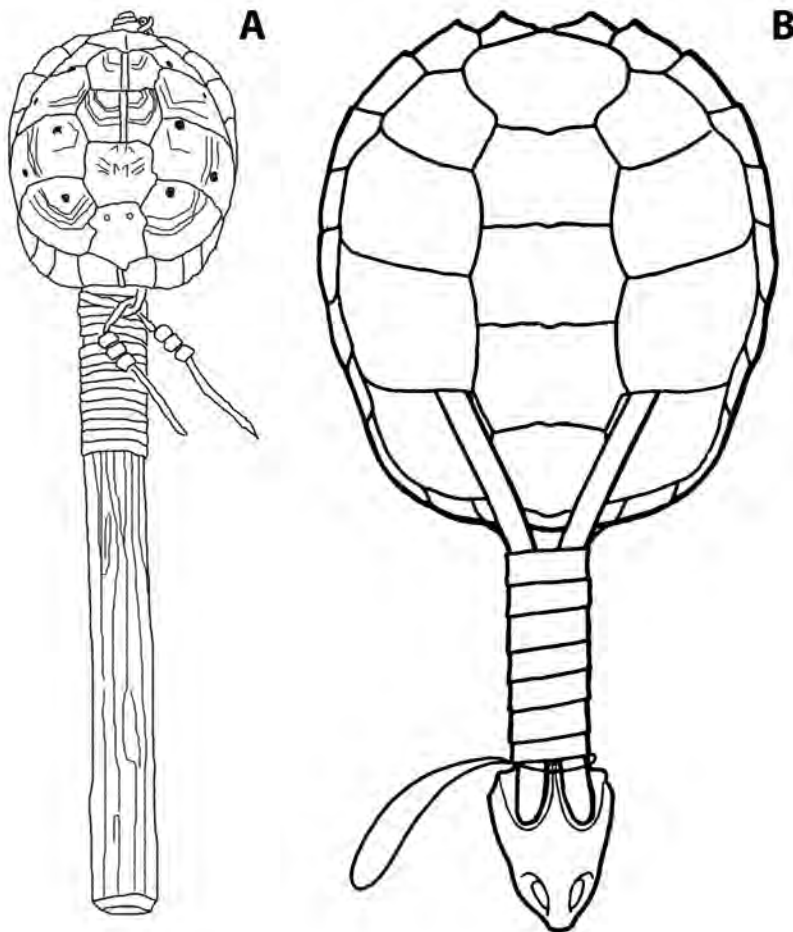


Figure 4. Parallel handheld turtle shell rattles. A – Parallel handheld box turtle shell rattle (figure produced by Bailey Gillreath-Brown); B – Iroquois parallel handheld snapping turtle shell rattle (adapted from Conklin and Sturtevant [1953]).

for different songs because pitch varies” (Hector 2018:6). Other rattle objects included pebbles (e.g., Harrington 1934:38) and *Conus* sp. shells (Strudwick and Koerper 2006). Among at least six southwestern Indigenous Peoples, deer hooves were attached to the outside of turtle shell leg rattles or put inside the handheld rattles (Supplementary Table 2; Gifford 1940:58, 151). Outside hooves produce a different sound to interior rattle objects. Likewise, in the East, a variety of rattle objects were used including pebbles, freshwater drum (*Aplodinotus grunniens*) molariform teeth,

seeds, and beads (Fradkin 1990:424; Gillreath-Brown and Peres 2017, 2018). Overall, rattle objects consisted of readily available flora and fauna.

The time for capturing turtles relates to seasonality and cultural events. In the East, spring may have been the season to catch box turtles. When box turtles emerge from winter hibernation, they look for food, mates, and places to nest. In the Southwest, turtles were collected “at the Zuñi sacred lake on the summer solstice pilgrimage and by the Hopi from the Little Colorado or the Rio Grande, particularly near Isleta”

in New Mexico (Parsons 1939:384–385). Hopi men would go on turtle hunting expeditions for up to a week (Lovich et al. 2014). They would wade in a line in the river feeling with their hands and feet to find turtles. Women and children could also have collected turtles while out gathering plants (Jochim 1976). A medicine man usually constructed the leg rattles for the Seminole (Howard and Lena 1984:115–117). Table 1 lists the habitats for different turtle species used in rattle construction.

Context of Use

Eastern United States

Turtle shell rattles were used across the East (Figure 5), as far north as Turner, Maine (Bourque 1995), but continue beyond the United States into Ontario, Canada (Pearce 2005). Ancient turtle shell rattles have been recovered from at least 13 eastern states (Figure 5A; Supplementary Table 1; Brown 2011; Gillreath-Brown and Peres 2018; Mounier 2003:111; Winters 1969:76). Here, I show that at least 18 Indigenous Peoples (including Susquehannock [or Andaste] from the archaeological record in Supplementary Table 1) in the ethnographic literature used turtle shell rattles (Figure 5B; Supplementary Table 2).

Ethnographic records indicate that turtle shell rattles were associated with medicine and healing, and used for many rituals and ceremonies, storytelling, and sacrifice (Supplementary Table 2). In the Southeast, Cherokee have a close relationship with turtles, particularly the eastern box turtle, which is used for rattles (Figure 1), medicine bags, and medicinal purposes (Fradkin 1990:424–425), such as to heal rheumatism (Fradkin 1990:425). Movarian missionaries in 1803 witnessed a dance at Oostanaula, a Cherokee town, where Schwarze (1923:79) states,

The last dance the missionaries witnessed was done by women only, dancing around the pole, the men

beating time. The female leader of this dance wore leather shoes with turtle backs fastened thereto with which she mightily rattled!

For treating thecrippler or rheumatism, Mooney (1891:348) says that,

the White Terrapin of Wáhala is invoked. ...he is regarded as having great influence in disease, ...the beads and a portion of the medicine are kept in a terrapin shell placed upon the diseased part while the prayer is being recited. ... The beads—which are white, symbolic of relief—are...put into a terrapin shell along with a small portion of the medicine.

In the Northeast, turtle shell rattles were connected to cosmology and used to give thanks for healing. Seneca used turtle shell rattles in a ceremony held by Towii'sas to “offer thanks to the spirits of the corn, the beans, and the squashes...[which] sustain our lives” (Parker 1909:179–180). Among the Seneca and Iroquois, “false faces,” who used turtle shell rattles, had the ability to cure a sick person, although their healing powers were limited to specific sicknesses (e.g., nose bleed and swellings), and a person had to dream of a false face to be a candidate for healing (Morgan 1922:159). Several false faces, wearing masks, would enter the home carrying parallel handheld snapping turtle shell rattles (Figure 4B), then perform a ceremony with hot ashes and a false face dance, which helped to clean a home of evil and disease (Blau 1966). For the Iroquois, turtle shell rattles gather power from the tree, which has sky and earth power (Parker 1912). This shows the strong “connection between the turtle and the world-tree that grows upon the primal turtle's back” (Parker 1912:611).

The archaeological record indicates that, across eastern North America, turtle shell rattles were associated with ancient rituals and ceremonies, as evidenced by the archaeological contexts of rattles

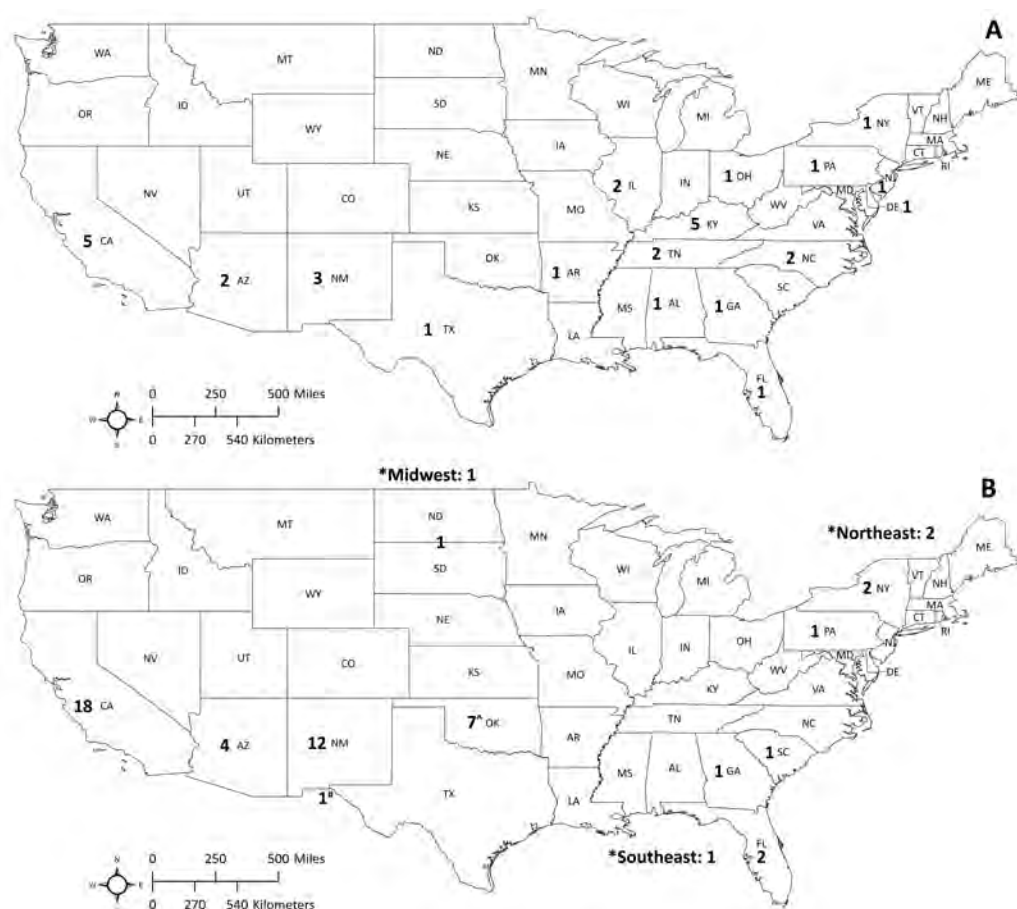


Figure 5. A – Number of archaeological sites that had turtle shell rattles (Supplementary Table 1); B – Number of Indigenous Peoples that used turtle shell rattles (Supplementary Table 2). *Additional Indigenous Peoples that did not have a recorded state. ^Two groups associated with the Northeast, and five groups with the Southeast. #Tiwa are located in Chihuahua, Mexico.

(Supplementary Table 1; Pearce 2005; see also Brown 2011; Gillreath-Brown and Peres 2017, 2018). Additionally, turtle shell rattles recovered from burial contexts were presumably buried with the person that had used the rattles (e.g., Swanton 1928a:396). Turtle shell rattles in the archaeological record appear as early as the Archaic period in the East (Griffin 1967; Pearce 2005; see also Brown 2011; Gillreath-Brown and Peres 2018), but extend into the historic period, such as the presence of rattles in seventeenth century Iroquoian burials in New York (Carpenter 1942; Roberts 1936). Most of the Archaic rattles (47 of 51) recov-

ered from the Middle Green River area of western Kentucky are from burials (Winters 1969:76). Furthermore, human remains from Archaic shell mound sites along the Mississippi River had accompanying turtle shell rattles (Bruhns 2007). Turtle shell rattles were used throughout the Woodland period (ca. 1000 BC–AD 1000) (Brown 2011). For southeastern Mississippian period turtle shell rattles, about 90% of the turtle shell rattles were recovered from burial contexts (Brown 2011). Interred turtle shell rattles “probably represent... [an individual’s] status as prominent dancers and ritual leaders” (Rodning 2001). Given the

prevalence of turtle shell rattles in burials and other ceremonial and ritual contexts, this suggests that, in the ancient Southeast, turtle shell rattles were probably regarded as sacred objects (Hodge 1910:355; Winters 1969). The sacred qualities of turtles are supported by effigy mounds in the north-central United States, of which turtle, human, and serpent figures are the most abundant type (Hodge 1910:163).

In the Northeast, turtle shell rattles usually consisted of eastern box turtle rattles in late prehistoric graves (Mounier 2003:111), but extended into the historic period (e.g., Pearce 2005). For the Iroquois, turtle shell rattles were in use at least by AD 1000 (Pearce 2005). Turtle shell rattles were recovered from sites from Texas to the Northeast (and other post-contact sites) during the sixteenth to seventeenth centuries (Figure 5A; Supplementary Table 1).

Recognizing that gender systems used by Indigenous Peoples prior to colonization in North America were likely different than they are today (e.g., Driskill 2008; Gilden 2007:240–242), the ethnographic record offers some insights on who used turtle shell rattles. For instance, historically, it was common for leg rattles to be primarily worn by adult women among the Creek, Yuchi, Chickasaw (Figures 2 and 3), Cherokee, and Seminole (Swanton 1946:252). Additionally, for the Creek, leg rattles were buried with the woman who owned the rattles (Swanton 1928a:396). However, shamans and leading men of the Iroquois, Seneca, and Shawnee use turtle shell rattles, although a young man or woman used rattles in the Seneca's Beggar Faces Dance (Conklin and Sturtevant 1953; Voegelin 1942). In the archaeological record, rattles are recovered from burial contexts of both women and men, although more rattles are recovered from burials of young females in the Southeast (Brown 2011; Bruhns 2007). In modern day, some southeastern Native Americans have two-spirit stomp dances, which are

open to mixed-gender people (Stewart 2014:268).

Western United States

Turtle shell rattles occur across the West, but with a smaller range than the East (Figure 5). Ancient turtle shell rattles have been recovered from at least four western states (Supplementary Table 1) and are used ethnographically by at least 37 Indigenous Peoples (Supplementary Table 2). For the Serrano (Yuhaviatam), the rattle (or *aiht*) was a sacred instrument, which is connected to creation (Siva 1998:31). For example, a man would play the turtle shell rattle and lead songs when singing sacred songs for the dead. The Cupeño and Cahuilla treated turtle shell rattles as sacred by including them in sacred bundles (the clan fetish or *masvut* bundle) (Strong 1929:233).

Turtles and turtle shell rattles are closely associated with the earth. For the Luiseño, Beemer (1980:11, 39) states,

On a twelve-inch stick are fastened three shells of the Pacific Terrapin.... These turtles when captured are put near a red ants' nest where the insects clean the shells. After they are empty and filled with a few seeds of manzanita, the nuts of the fan palm, small pebbles or certain other traditional material, they make fine rattles. ...three shells are used, one representing Earth..., one Sky and the middle one Sun.

Following the eighteenth-century Pechanga-Pauma war, the turtle shell rattle was integral to peace ceremonies (White 1963:129–132; see also Strudwick and Koerper 2006). Since the Pechanga had a bad acorn crop year, the Pauma allowed them to collect from their crops (White 1963:129–132). However, the Pauma working in the collection area were not told about the Pechanga collectors, which resulted in Pauma attacking the Pechanga and killing a 15-year-old Pechanga boy, resulting in the Pechanga-Pauma war. White (1963:130) states,

The war chief, Takowshish, of Pauma accompanied his singers, keeping time with his turtle rattle, and the Pechanga people stood quietly until all was finished. ...the Pauma war chief took his turtle rattle into which all of the hatred and aggression had been "concentrated," pounded it into pieces, and buried it in the Pechanga wamkish.

In 1911, the Pechanga used turtle shell rattles in image ceremonies, allowing for the dead to depart (McPherson 1931:137; see also Strudwick and Koerper 2006).

In modern day, Hopi and Zuñi use turtle shell rattles in the *katsina* ritual, which relates to spiritual beings in the Ancestral Pueblo peoples' beliefs (Bunzel 1932:870; Griffin-Pierce 2000:72). During *katsinas*, dancers become spiritual beings by wearing masks and participating in the ceremony. Griffin-Pierce (2000:72) reported that "each *katsina*, his sleighbell and turtle-shell rattle jingling and clacking with each step, gestures to a Hopi in the audience to come forward," then food was distributed to the person. Turtle shells are also smoked over by the Water-Corn clan chief before being used by Hopi dancers (Parsons 1939:161). The turtles are water creatures; therefore, they are of the Water-Corn clan. The Black Eyes (winter) and Shure' (Gopher) (summer) moiety organizations wear turtle shell rattles under the right knee, which are made of water turtle and land turtle, respectively (Parsons 1939:787, 929). Mendelieff (1886) describes the use of turtle shell rattles (see Mendelieff 1886:Figure 1) among the Hopi for a "snake-dance," which he interprets as being related to procuring rain. Turtle shell rattles were used by the Papago to cure "turtle sickness" (Drucker 1941:124, 188).

Turtle shell rattles in the West are less common in the archaeological record compared to the East, although this could be a sampling bias. Brown (1971:367) suggests that the instruments first appeared in the Southwest during the early Pueblo I to II periods (ca. AD 600–1000). Western

ancient rattles are recovered from burials, such as the rattle from the left arm of the Vandal Cave (ca. AD 500–700) mummy (Brown 1967; Haurly 1936). Other ancient turtle shell rattles were recovered from New Mexico sites dating to ca. AD 700–1600 (Cosgrove 1947:32, 120; Kidder 1958:123; see also Brown 1967:76, 85).

Turtle shell rattles were recovered from several sites in southern California spanning AD 840 to contact (Hector 2018; Rector et al. 1983; Schneider and Everson 1989; Strudwick and Koerper 2006). In ancient California, rattles were associated with burials, such as the pond turtle shell rattle fragments from the Oro Grande site, which were likely interred following a mourning ceremony (Rector et al. 1983:97; Schneider and Everson 1989). Further, at the Los Altos-2 site (ca. AD 1000 to contact), a Pacific pond turtle shell rattle was interred with a young adult male (ca. 21–25 yrs. old) (Strudwick and Koerper 2006).

Turtle Shell Rattle Music

Rattles create many different sounds depending on the motion and intensity of shaking, rattle type, and rattle object. As a closed container of rattle objects, turtle shell rattles produce an intense pounding noise as the river pebbles bounce, twist, and turn violently within the shell. The noise can reverberate so loudly that it overtakes singers' voices (Conlon 2006). Here, I highlight the different contexts of turtle shell rattles as musical instruments and the role that they play in rituals, such as healing, storytelling, and several dances and ceremonies in the East and West (Supplementary Table 2).

Eastern United States

Turtle shell rattles are used in many ceremonies, dances, and rituals to provide magical healing songs, rhythm, and storytelling/visions. First, the Shawnee used parallel handheld rattles for magical songs, typically sung by a shaman (Figure 4; Voegelin 1942).

Second, turtle shell rattles were used in many dances, which provided rhythm and gave cultural meaning to the dances. Turtles contribute “to the life support of the [Iroquois] people” (Speck 1945:77). According to Speck (1945:77), musical instruments provide,

the feeling of communion of spirit that underlies the use of a turtle’s shell, splints of hickory, threads of animal sinew, animal skin wrappings, and kernels of maize, combined in the making of a large snapping turtle shell rattle and blended into the purpose of the man who uses such a combination of spirit forces as a rhythm marker to accompany his voice.

Turtle shell rattles are most notably used in the Stomp Dance, which can be ceremonial or social (Figures 2 and 3; Conlon 2006; Jackson and Levine 2002; Swanton 1928b:558). The Stomp Dance consists of singing, dancing, and honoring Creation, as people dance around a sacred fire (Figure 2). Typically, women wear the turtle shell or milk-can rattles on their legs for the rhythm, such as among the Chickasaw (Figures 2 and 3; color images available in Supplemental Content), while the men sing. For Cherokee, Stomp Dance is important for preserving *duyuktv* (Driskill 2008). *Duyuktv* is a traditional Cherokee worldview of how to go “through life on a path of peace, justice, and balance” (Driskill 2008:122). For example, pre-European contact, the Cherokee had a matrifocal clan system; however, this was nearly destroyed by the colonial enforcement of patriarchy. Thus, the roles of men and women were thrust out of balance (or *duyuktv*). The shell shakers are an integral part of the Stomp Dance, particularly since their “lifeways are dependent on them” (Driskill 2008:125). Dancing plays an important role in maintaining the world and keeping it alive, whereas, when the dancing stops, the world ends. The shell shaking helps to maintain or restore *duyuktv*, sustain life-

ways and culture, and to reaffirm Cherokee lifeways and gender identities.

The Feather Dance was a common dance among the Iroquois, which Morgan (1922:268–269) understood to be the worship of the Great Spirit and “praise of various objects in nature.” Two singers would sit in a room using a parallel hand-held snapping turtle rattle (Figure 4B), then the rattles would be hit on a seat to keep beat for the dancers. The rattle—an object of nature and simultaneously reflects the sounds of nature—had a “thunderous hammering” compared to the “soft swishing of the horn rattles” (Speck 1945:81).

Creek and Seminole women used turtle shell leg shackles during the Green Corn festival (Gillreath-Brown and Peres 2017). Women engage in the “Ribbon Dance,” in which they move in sync to the sound of turtle shell rattles (Reilly 2004:38). The Green Corn Festival is when the maize turns ripe, and no one eats the maize until it has been blessed (Ballard 1978; Fenton 1942:12).

Third, turtle shell rattles were used for storytelling and visions. Among the Delaware in Oklahoma, turtle shell rattles were used during the Delaware Big House ceremony, where McCracken (1956) recorded that turtle shell rattles entered use on the ninth day. A new fire was started on the ninth day, possibly symbolizing “a fresh start in all affairs of life” (McCracken 1956:187). I believe the fresh start could be connected to Creation mentioned by Speck (1931:44–47), with a new beginning. Starting with the leader, the turtle shell rattle was passed from person to person—those that were having visions would share in a sing-song style, keeping beat with the rattle. Storytelling of visions would continue until the turtle shell rattle came back to the leader. Turtle shell rattles were used in several other ceremonies, including Grease Drinking Ceremonies (i.e., Bear Rite and Otter Rite), Mask Dance Ceremony, and Doll Dance (Speck 1937:26; see Supplementary Table 2).

Western United States

In southern California, turtle shell rattles were associated with image (or mourning), first fruits, girls' puberty ceremonies, and creation songs (Du Bois 1908:101, 181, 183, 186; Hector 2018; Sparkman 1908) among the Ipai, Cahuilla, Luiseño, Cupeño, and Diegueño. The image ceremony was a commemorative ceremony for someone who had died (Du Bois 1908; Sparkman 1908:210; Strong 1929:305; see also Beemer 1980:11, 22). Du Bois (1908:101) describes the ceremony as,

The dancers now paint themselves and put on the feather head-dresses. ...and they come...carrying the images and marching around the sacred enclosure, bringing the turtle-shell rattle. ...they dance to a long series of songs.

Du Bois (1908:186) states that men used turtle shell rattles, while women danced. Cupeño used turtle shell rattles in the second of three ceremonies for the dead, where possessions were burned (Strong 1929:266), and in the final ceremony for the dead, where images were burned (Strong 1929:268). For the Chumash region and southern California, singers and dancers used turtle shell rattles only in ceremonial gatherings (Gamble et al. 2001:194), such as in the Fox Dance and Bear Dance (Hudson et al. 1977:82, 84).

In the Southwest, every item that Pueblo people wear (e.g., clothing and jewelry) or have with them in ceremonies and *katsinas* has significance, including turtle shell rattles (Dutton 1983:54; Fewkes 1897:263, 281, 283, 287, 296). For example, Dutton (1983:55) states that "gourd and tortoise shell rattles imitate the swish of summer rain on the growing crops." The Turtle Dance was a maskless *katsina* dance (Parsons 1939:782; see also Fewkes [1902:66] for the Tiwa of Ysleta, Chihuahua, Mexico who do this dance) at Ohkay Owingeh (known in English as San Juan Pueblo), New Mexico. Thirty-seven male dancers wore turtle shell rattles under the

right knee. Ortiz (1979) describes the Turtle Dance as being "named for the turtle, believed to be the first hibernating being that moves about after the year has turned; thus, the turtle is seen as symbolizing the beginning of each new annual cycle." The songs are recomposed every year, so that heritage and new ways can be incorporated. Four Turtle Dance songs recorded in 1974 with English translations (Ortiz 1979) can be heard on iTunes².

Discussion and Future Research

A comprehensive evaluation of 120 ethnographic references showed that at least 55 Indigenous Peoples across the contiguous United States used turtle shell rattles, and more often than not are associated with ceremonial/ritual contexts. Archaeological data showed that turtle shell rattles have a similar spatial distribution to the ethnographic data (Figure 5). Furthermore, turtle shell rattles occur as early as the Archaic period in the East; however, they do not occur in the West until at least AD 500.

While there are some general themes for turtle shell rattles (e.g., connection to creation stories and ceremonial instruments) across North America, the cultural meanings behind these musical instruments and how they were used by Indigenous Peoples varied greatly between groups and over time, and should be contextualized in individual cases (Supplementary Tables 1 and 2).

From a functional point of view, turtles are slow and thus easy to capture. Furthermore, the shape of a turtle shell may naturally lend itself to be a raw material for rattle construction. However, given the connection between creation stories and turtles, selection of turtles is unlikely to be purely functional. The creation story about the world being on the back of the Great Turtle (or Turtle Island) is a common origin story for the Cherokee, Iroquois, Delaware, and Shawnee (e.g., Fenton 1962; Miller 1974; Parker 1912:611; Pearce 2005),

although, in the West, turtles and turtle shell rattles were also a part of creation for the Hopi and Sierra (e.g., James 1974:1; Siva 1998:32). The expansive use of turtle shell rattles and other turtle artifacts (e.g., effigies) shows a great reverence for the turtle (Pearce 2005; see also Brown 2011; Gillreath-Brown and Peres 2017, 2018). Turtle shell rattles produce a steady beat for dancers to dance, which creates the new and helps the world to continue on (Driskill 2008). Turtle shell rattles are saturated with life, healing, and mediation, which played important roles in ceremonies and rituals (Driskill 2008; Fradkin 1990:425; Miller 1974:307; Morgan 1922:159; Speck 1945:77; see also Supplementary Table 2).

Turtle shell rattles contribute to the social process of music-making, where Indigenous Peoples are playing, sharing, and collaborating. For the Cherokee, music strengthens relationships between people, reaffirms gender and group identity (Driskill 2008), and connects people to their environments (e.g., Brabec de Mori and Seeger 2013; Driskill 2008; Mathur 2008). For example, in the East, turtle shell rattles, particularly leggings, were associated with women, although the handheld rattle may have been used by men, such as with the Chickasaw (Figure 3); whereas, in the West, turtle shell rattles were more associated with men. For the Cherokee, turtle shell rattles contribute to this process by restoring or maintaining *duyuktv*. Driskill (2008:129) states, "We must shell shake and sing a Friendship Dance to mend the damage done to Cherokee gender through invasion, genocide, and removal." Turtle shell rattles are used for many purposes, ranging from meeting physical needs of a person (e.g., curing turtle sickness in the West [e.g., Drucker 1941:124, 188]) to helping the world to continue (Driskill 2008).

The many examples of rattle contexts presented here demonstrate the many decisions (e.g., rattle type and objects) that have

to be made about rattle construction and use for ceremonies. Materials and construction types alter the sound of a rattle. In addition, the way in which the rattle is shaken (e.g., a single beat, a double beat, and a tremolo) (Siva 1998:33) or hits another item (e.g., a seat) can also change the effect. Therefore, turtle shell rattles can have many different combinations, are complex, and take a long time to master.

Music created by turtle shell rattles is not isolated but occurs in the context of many varying elements, such as people wearing particular clothing, singers, environment, and other instruments and participants (Simonett 2014). Different combinations of these elements create new positional relationships to the world, such as rattles echoing the sounds of nature (e.g., Dutton 1983:54–55) or gathering power from a tree (Parker 1912). Thus, turtle shell rattles are a component within the musical system that enhances a deeper human-environmental relationship.

Changes in Rattle Use

For many reasons, turtle shell rattles are used less frequently today by Seminoles and Cherokee; among these reasons are declining access to preferred turtle species. For example, the Seminoles now commonly employ evaporated milk cans to make rattles (Capron 1953:184) because of the decline in the box turtle population (Dodd 2002). The transition to other items (e.g., cans) (Figures 2B and 3A) may be the result of reduced access to traditional places due to development and building construction (Hector 2018:10). However, rattles that substitute for turtle shell rattles (or turtle substitute rattles) usually have the same function and meaning in ceremonies (Figures 2B and 3A), although a lead shell shaker may still use real turtle shells (Gillreath-Brown and Peres 2018). Conklin and Sturtevant (1953:274) describe the Seneca's wooden turtle shell rattles that were used in place of the "great turtle

shell rattle" (Figure 4B). At Taos Pueblo, New Mexico (January 1, 1932), the Turtle Dancers began using bells in place of turtle shell rattles on the right leg below the knee (Parsons 1939:784). Turtle substitute rattles were also used during the Mississippian period (ca. AD 800–1500). For example, Sampson and Esarey (1993) describe approximately seven copper turtle shell effigy rattles from the Mitchell site (ca. AD 1150–1250), Madison County, Illinois. The effigy rattles are unique to the Mitchell site, since most Mississippian copper artifacts are copper-covered wood or copper plates.

Various state laws and conservation statuses of turtles impact peoples' ability to freely collect turtles (Table 1). International Union for Conservation of Nature (IUCN) Red List has the status for five turtle species (i.e., eastern box, wood, Blanding's, Pacific pond, and Mojave Desert) of interest. For example, the eastern box turtle (listed as vulnerable) population trend has decreased for the past century due to habitat destruction, increased predation (e.g., raccoons and foxes), and commercial pet trade (van Dijk 2011). To protect box turtle populations, many states (e.g., Illi-

nois and Tennessee) have prohibited wild box turtle collection. Furthermore, state prohibition laws on collecting wild animals do not include exemptions for Indigenous Peoples. Therefore, they must obtain a permit (and pay any fees) for collection. These prohibition laws could be amended in a similar way to peyote usage in the American Indian Religious Freedom Act of 1978, which was amended in 1994 to allow for traditional use of peyote. Turtle shell rattles are used today and sometimes passed down as heirloom items (Koons 2016:223–226). Eastern box turtle populations are not on the Endangered Species Act (ESA) list. However, the wood, Blanding's, and Pacific pond turtles are currently under review for the ESA list. The ESA lists the Mojave Desert tortoise as "threatened due to similarity of appearance"—it is given similar protection provisions as similarly listed species. The ESA (section 10e) exempts only Alaska Native Peoples, excluding Indigenous Peoples in the other 49 states. Currently, state laws are protecting endangered or vulnerable species such as the wood (e.g., Maine) and Pacific pond turtle (e.g., California) (Table 1).

Table 1. Habitats and IUCN Red List status for different turtle species used in rattle construction.

Taxon	Habitat	Reference	IUCN Red List Status
Eastern box turtle (<i>Terrapene carolina carolina</i>)	Mesic (moist) woodlands	Dodd 2002:40–41	Vulnerable
Ornate box turtles (<i>Terrapene ornata</i>)	Grasslands (but also mesic woodlands)	Dodd 2002:42	Near Threatened
Snapping turtle (<i>Chelydra serpentina</i>)	Aquatic (with muddy banks and bottoms)	Carr 1952:64	Least Concern
Pond slider (<i>Trachemys scripta</i>)	Wetlands and ponds	Carr 1952:246	Least Concern
Wood turtle (<i>Glyptemys insculpta</i>)	Woods and meadows; also streams and ponds during the cool season	Carr 1952:121	Endangered
Pacific pond turtle (<i>Actinemys</i> sp.)	Aquatic (quiet ponds, lakes, and streams with mud)	Carr 1952:125	Vulnerable
Mojave Desert tortoise (<i>Copherus agassizii</i>)	Desert terrain	Carr 1952:324	Vulnerable
Painted turtle (<i>Chrysemys picta</i>)	Inland wetlands	Carr 1952:217	Least Concern
Blanding's turtle (<i>Emydoidea blandingii</i>)	Inland wetlands, grassland, shrubland	Carr 1952:134	Endangered

Future Research

The research presented here provides new information on the deep relationships between people and turtles. These deep relationships are reflected by the connection of turtles to Indigenous creation stories and the beyond functional uses of turtles (e.g., turtle shells used as bowls). Turtle shell rattles have cultural meaning in ceremonies, dances, and rituals that goes beyond just being a percussive musical instrument, such as they are objects of nature and simultaneously used to praise nature (e.g., Morgan 1922:268–269; Speck 1945:81). Ethnobiology provides the ideal field to delve deeper into understanding ancient human-animal relationships. This will only be possible by collaborating with other researchers from different disciplines (e.g., Native and non-Native ethnomusicologists) and Indigenous communities (see Nabhan [2003] for an example of understanding human-turtle relationships among the Seri) to explore broader topics related to turtle shell rattles, such as turtle hunting techniques, social practices and institutions in relation to the hunt, and other cultural meanings behind rattles and different turtle species.

This study has implications for studying past musical behaviors and sounds. Ethnographic data show the different contexts of use for turtle shell rattles, thereby providing a basis to study the range of sounds that may have been produced by different turtle shell rattle types, as well as associated behaviors. Tony Chavarria (2013) of Santa Clara Pueblo said, “For...Southwestern tribes...music has remained the heartbeat of sacred life ways for more than two thousand years.” Instruments, dances, songs, and prayers “become joined to creation... join us to the world” (Chavarria 2013). Turtle shell rattles become one with the dancer, songs, instruments; an important part of “the natural rhythm of life...[with] the sounds connect[ing] us to all life” (Chavarria 2013).

Notes

¹ See metmuseum.org/art/collection/search/500889 for photographic example.

² itunes.apple.com/us/album/oku-shareh-turtle-dance-songs-of-san-juan-pueblo/394204211.

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