

The Ouachita Project

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Abstract

The possibility of an unlisted anthropoid species indigenous to the Ouachita Mountain Ecoregion was investigated on a protracted basis by the North American Wood Ape Conservancy (NAWAC). Surveys ranging from 60 to 120 uninterrupted days were conducted during the 2011-2014 field seasons in an area with a history of reported sightings of large ape-like wild animals. Observations recorded by NAWAC teams are described and discussed in this paper.

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Introduction

The mission of the North American Wood Ape Conservancy is to facilitate official recognition, protection, and conservation of what it believes is a rare unlisted North American anthropoid species. The Ouachita Project is a long-term research initiative conducted by the NAWAC in the Ouachita Mountain Ecoregion dedicated to the definitive resolution of the NAWAC's mission. The project has consisted of annual field surveys lasting between 60 and 120 days through the spring and summer months. Beginning in 2011, multiple teams—tasked with documenting direct observations—were deployed in consecutive one-week shifts over periods of several months during each calendar year. During the four-year period, a total of sixty-three individuals participated in the project.

The authors are convinced that fieldwork carried out by NAWAC teams resulted in significant observations and experiences—some of the most notable of which are described in this paper—while recognizing that anecdotes and anecdotally derived evidence cannot suffice to convince members of the scientific community and governmental entities that the North American wood ape (“wood ape”) exists in the absence of a type specimen. Nevertheless, the authors anticipate that the NAWAC's efforts are sufficient to provoke interest, and, hopefully, collaboration with open-minded professionals, despite not yet producing conclusive evidence necessary to generate the proper description of a relict or novel species.

Understandably, most members of the scientific community remain publicly dismissive about the possibility of a North American anthropoid, but there is no evidence that, prior to the NAWAC's project, any dedicated field research over extended, contiguous periods had been carried out, despite persistent eye-witness reports of encounters with ape-like wild animals and occasional discoveries of ostensible trace evidence. Therefore, it is additionally hoped that this paper will serve to stimulate comparable surveys by others using the NAWAC model of extended, observational, and qualitative/quantitative fieldwork conducted in other remote North American locations likewise rumored to be habitat for the presumptive species.

The isolated study area is on private property located in the heart of the Ouachita Mountains in Eastern Oklahoma. Only one difficult and rocky road leads to the property, which is set in the midst of hundreds of thousands of acres of publicly and privately held forestland and mountainous formations. The surrounding mature forest has not, in all likelihood, been

logged since the end of the nineteenth century (Weakley, Dinerstein, Noss, Strittholt, & Adams, n.d.). A few primitive hunting cabins stand on the property, with one of the cabins generally providing the base of operations for NAWAC teams. The closest permanent residences are located miles away.

The Ouachita Mountain Ecoregion reaches roughly 75 miles, or 120 kilometers, from north to south, and it extends approximately 235 miles, or 380 kilometers, from its easternmost extremity in Arkansas to its westernmost extremity in Oklahoma. The mountains comprising the region are geologically unusual in North America with regard to this east-west orientation. The area receives, on average, approximately 60 inches of rain, or 1,325 millimeters, per annum (Weakley, et al., n.d.); and the average temperature is 59°F, or 15°C (U.S. Climate Data, 2015). The ecoregion is composed of approximately 11.5 million acres of mixed forest—including considerable stands of old growth forest—along with rugged mountainous terrain, sweeping valleys, head-springs, and is the source of a number of significant riparian systems. The ecoregion's notable biodiversity and habitat variation stems in no small part from its geological intricacies and soils. Accordingly, the area has no shortage of rare and endangered species, with 14 federally listed as endangered and another 28 federally listed as potentially endangered by the United States Fish and Wildlife Service (USFWS). Moreover, of the 79 terrestrial communities identified in the ecoregion, nine are endemic, making them a matter of conservational concern by definition (Ouachita Ecoregional Assessment Team, 2003, p. 1856). The ecoregion's terrestrial communities are greatly stressed by faunal exploitation, logging, fragmentation, conversion, and destruction of habitat, as well as "alteration of natural fire regimes" (Weakley et al., n.d.; Ouachita Ecoregional Assessment Team, p. 1857). It is not difficult to imagine that the discovery of any large mammal would reap valuable benefits for the entire region in a post-discovery world in which conservation efforts are collaborative, coordinated, and vigorous.

Reports of encounters with large upright hair-covered animals in North America, including the south-central region of the United States, have been around for centuries, both in the context of Native American culture and Euro-American settlers and their descendants. An ape-like species figures prominently in the cultures of many Native American tribes, particularly those tribes of areas similar in ecological and environmental nature to the Ouachita Mountain Ecoregion, that is, areas characterized by abundant rainfall, significant waterways and bodies of water, dense forest (upland pine and hardwood bottoms), and low human population densities.

Although anecdotal reports from the past or folklore and legends handed down for generations do not serve as proof that an unlisted relict or novel species exists, the persistence of the reports and legends, along with the fact that sightings continue to be reported to the present day, should serve to disprove the notion that reports of wood apes in the area of interest are a relatively new phenomenon. However, it must be admitted that the absence of a type specimen and no known traces in North America's fossil record severely limit the value of anecdotal reports and legendary hearsay. What is more, the fact that the world's known great apes reside in Asia and Africa only adds to the difficulty in even considering the possibility that North America could be home to an extant species of ape, particularly in the twenty-first century.

It is worth noting here that a precedent for a robust anthropoid, such as is presented via anecdotal descriptions of the North American wood ape, exists in the form of *Gigantopithecus blacki* and *G. giganteus*, species documented in the fossil record from China and India respectively. *Gigantopithecus* is known by four mandibles and approximately 1000 teeth; post-cranial fossils have yet to be recovered. Krantz (1999), Wu (1962), and Robinson (1972) argued for the possibility that *Gigantopithecus* demonstrated a bipedal posture, but this is not a widely held position among most other physical anthropologists. Krantz based his position on posterior widening of the mandibles. Weidenreich (1946), Eckhardt (1972), Wu (1962), and Robinson (1972) classed *Gigantopithecus* as a hominid, although this view has not been advanced since the 1970s. Green was first to suggest a connection between an extant North American ape and *G. blacki* (1968). Joseph Wraight (PhD in Human Ecology), the chief geographer of the U.S. Coast and Geodetic Survey, considered a possible expanded range of *Gigantopithecus* into North America to be “logical” and a possible relationship between *Gigantopithecus* and an extant North American ape to be “compelling” (Sanderson, 1968). Krantz also proposed a direct link (1999). More recently, Meldrum presented a cogent argument for a correlation between an uncatalogued North American ape and *Gigantopithecus* (2006).

G. blacki is thought to have become extinct during the middle Pleistocene, at the latest between 200,000 to 400,000 years ago; *G. giganteus* dates from approximately 6.3 mya (Glickman, 1998). The taxonomy of apes has been controversial, but *Gigantopithecus* is thought by many to have been affiliated with the group from which the orangutan was derived (Delson, 1985).

Movement of *Gigantopithecus* to the New World from Eurasia would have occurred by means of the Bering Land Bridge, just as many other species of plants and animals made the intercontinental crossing at various times throughout Earth history. Paleontological evidence indicates the presence of moist forest environments and temperate climates at times in the Bering Land Bridge region (Turekian, 1971), suggesting that “this environment was at one time similar to the environment of present day anecdotal observations” of wood apes (Glickman, 1998).

Glickman noted that today’s temperatures are warmer than 300,000 years ago. “If, as a result of this warming, *Gigantopithecus* migrated to a cooler and perhaps montane environment, there is little expectation of recent fossil formation” (Glickman, 1998). On the other hand, Jones (1992) speculated that a change to a cooler, drier, more seasonal climate may have led to the extinction of *Gigantopithecus*. Whatever the situation, it is worth noting that the huge apes existed for millions of years and doubtless survived dramatic climatic changes in the interim.

Certainly, assertions that the North American wood ape is an undocumented descendent of a species of giant ape from China, and that its arrival in the New World took place via Beringia, begs the question in lieu of definitive fossil evidence. However, that is not to say that pertinent fossil evidence does not exist.

Ciochon indicated that examinations of fossilized plant remains (phytoliths) embedded in *Gigantopithecus* teeth provide dietary clues as well as indications as to habitat preference (1990). Meldrum argued that more current tooth wear analyses demonstrated that *Gigantopithecus* was more of a generalist (2006). At any rate, given the age of the fossils and their location, there is general consensus that *G. blacki* lived in a forested ecosystem contemporaneously with species that include the red panda, orangutan, and the giant panda. The significance of this assemblage becomes evident with the discovery of red panda (*Pristinailurus bristoli*) fossils in North America, found as far east as Tennessee (Wallace & Wang, 2004). It seems presumptuous to conclude that *G. blacki* could not have migrated in a similar fashion. Indeed, Geoffrey Bourne, the one-time Director of the Yerkes Primate Research Center, seriously considered the possibility: “...there is no reason why *Gigantopithecus* could not have earlier come up the mountain causeway and crossed the Bering Strait...perhaps the *Gigantopithecus* is the bigfoot of the American continent...Only the discovery of an actual animal and its thorough scientific examination can provide the answer” (Meldrum, 2006, p. 95).

The absence of *Gigantopithecus* fossils in North America may seem noteworthy, but it should be pointed out that there is a 5,000,000 year gap in the Asian fossil record for *Gigantopithecus* (Glickman, 1998). In light of that, the absence of fossils for *Gigantopithecus* during the last 18,000 years, even in a North American context, may be overemphasized. Moreover, if *Gigantopithecus* did indeed cross the land bridge, the absence of a fossil record in North America should be understandable as one considers the process of fossilization and related environmental factors. As discussed by Fortey, fossils are typically found in rocks that were originally unconsolidated sediments. Certain environments which today support a rich and varied plant and animal life have no sediments forming in them; the organisms living there have virtually no chance of being preserved in the fossil record. Mountainous regions, for example, are dominated by the erosion of the rock forming the ranges, and therefore no permanent sediments are formed there. Torrential rain and rapid weathering, aided in some climates by the action of frost, rapidly destroys much of the organic material; the chances of any preservable remains reaching a lowland river where permanent sediment is accumulating are remote. The faunas and floras of mountainous regions of the past are most unlikely to be represented in the fossil record. The fossilization potential of a mountainous environment is low (Fortey, 1991). Purported wood ape distribution patterns suggest that the very factors that limit the possibility of fossilization are those typifying the preferred habitat of the species, that is to say, forested, generally mountainous regions, and areas of high rainfall. Indeed, the only reason that the existence of *Gigantopithecus* came to light in the first place is because porcupines transported bones into caves to cache and consume them for calcium (Ciochon, 2008).

In itself, absence from the fossil record does not indicate implausibility of existence. The first chimpanzee fossils were not described until 2005, but the species was certainly known to exist prior to this discovery (McBrearty & Jablonski, 2005). Nothing contradicts the possibility that *G. blacki* represents the fossil record of the North American wood ape. If it is extinct, *Gigantopithecus* would represent the only ape known to have become extinct during the Pleistocene epoch (Ciochon, 1990).

Background

In September 2000, Alton Higgins, a wildlife biologist and the current Chairman of the NAWAC, led a small team into remote areas of the Ouachita Mountain Ecoregion to investigate reports from the local population regarding a large enigmatic animal species alleged to inhabit the general area (<http://woodape.org/reports/report/detail/457>). Higgins used his formal education in wildlife biology and zoology from Arizona State University and his training and experience as a field biologist for the State of Arizona to employ techniques sometimes used by field biologists who utilize reports from indigenous peoples to determine likely areas in which to conduct searches for species of interest.

After interviewing locals and receiving guidance from a retired forest service supervisor, Higgins and his team narrowed their search along a rocky, remote “jeep trail” set among hundreds of thousands of acres of privately owned and government timberlands. After several days of encountering no other people and finding nothing of significance, the team discovered an anomalous series of humanoid tracks in a dried mud hole just off the trail that generally matched other descriptions of tracks reportedly made by the putative species. The tracks were complete with toes, and measured sixteen inches in length, seven inches at the ball, and four inches at the heel. This was enough to convince Higgins that the area was worthy of further investigation.

In May of 2001, Higgins made contact with a “retired gentleman” who had built a cabin not far from where Higgins had discovered the tracks in the mud hole (Higgins & Elliott, 2001, Background section). The man told Higgins that he and his family stayed in the cabin a few times a year for several days at a time and that they often had disturbing experiences with a form of wildlife with which they were not familiar. Higgins was especially intrigued by the man’s anecdotes of “strange occurrences,” “strange, extremely loud vocalizations,” and rocks that were sometimes hurled “from the nearby mountainside, occasionally even striking the roof of the cabin” (Higgins & Elliott, 2001, Background section). The man invited Higgins to stay in his cabin. Higgins accepted the invitation and after spending a night on-site, surveying the area, and interviewing other family members, Higgins decided the area was indeed “worthy of an intense investigation” (Higgins & Elliott, 2001, Background section).

In late September into the first week of October 2001, Higgins led a team of biologists and naturalists to the cabin site for a field study that lasted roughly one week. During the field study, team members reported contacts with presumably large vocalizing animals that

approached team members during the night, produced “heavy footfalls” and broke branches, but remained hidden behind dense vegetation, very much in the manner of the known great apes when producing intimidation displays (The Last of the Great Apes: The Chimpanzee, n.d., Chimpanzees’ social behavior).

Higgins and his team believed they had had close encounters with an unrecognized species of animal. The initial trackway in the mud hole discovered and examined closely by Higgins in the summer of 2000 had led him to form a working hypothesis. The contacts documented by his teams further informed his hypothesis: Not only did he now believe the animal that had created the trackway and the animals with which his teams had come into contact were of the same species, but he also now believed it possible that the species was resident to the area surrounding the cabin site (A. Higgins, personal communication, December 2, 2014).

A sighting report taken by Higgins in June 2002 also played a role in convincing him that the area surrounding the cabin site was habitat for a previously undescribed species. The individual who was interviewed for the report was a deer hunter and a relative of the “retired gentleman” who owned the cabin. On October 27, 2001, the deer hunter had been hunting in a tree stand on the same mountain from which rocks were supposedly thrown, as asserted by the cabin owners, when he saw a black, chimp-like animal, “three to four feet” in height, about sixty yards away up in a tree. The animal reportedly turned to look at the hunter before it quickly disappeared into dense foliage. The hunter told Higgins that what he saw reminded him of a chimpanzee (*Pan troglodytes*). He also told Higgins that he had been a “skeptic,” but now he knew that “something” was “going on” in the area (<http://woodape.org/reports/report/detail/383>).

In late 2002, Higgins took another team back into the area for another week-long field study. As with the 2001 expedition, the team again documented similar activity: External cabin walls were loudly and forcefully “slapped” or struck; team members were stalked by unseen lurkers; rocks were thrown at the cabins; and, loud, bizarre, and unfamiliar vocalizations were produced by some type of wildlife that always remained out of sight. On a personal level, Higgins needed no more convincing that there was an unlisted species residing in the valley (A. Higgins, personal communication, December 2, 2014).

In August 2004, Daryl Colyer—a lifetime outdoorsman with a background in Air Force airborne intelligence and a degree in history, and trained in evasion techniques and wilderness survival—joined Higgins for another visit to the cabin site for four days and four

nights. Colyer had reached out to Higgins in July 2003 after reading Higgins's report about his earlier surveys of the area. While there, Higgins and Colyer (accompanied by his wife and step-son) documented nightly impacts on their cabin walls and windows, presumably from thrown objects such as nuts or rocks. They also discovered a set of very fresh tracks on wet mossy rocks, complete with apparent toe impressions, spanning up an embankment of the nearby creek. The tracks were located as the two men investigated the area where Colyer had heard, minutes earlier, a large rock crash and bounce in the nearby rocky creek bed. Just prior to the large rock incident, perhaps seventy-five yards away from Colyer, his wife believed she and her son had been approached as they played in the creek, just after she had heard a distinct ape-like grunt from the nearby dense foliage.

Over the next two years, Higgins and Colyer prepared to launch a long-term camera-trap initiative in the area (now referred to as "Area X" by the men). The camera-trap project, dubbed *Operation Forest Vigil* by Higgins, was designed to obtain:

photographic and/or video evidence through a long-term remote camera trap project based on the premise that such evidence can suffice to secure recognition of the existence of a large undocumented primate species. From that point, more intense and properly funded research would enable the collection of further and additional forms of evidence, including, ultimately, sufficient physical evidence to permit either the formal designation of a previously uncatalogued species or the recognition of the wood ape as the descendent of a previously described species... (Colyer & Higgins, Abstract, 2008).

In April 2006, Higgins, Colyer, and Chris Buntentbah launched *Operation Forest Vigil* in "Area X" with the placement of several high-quality game cameras, including a Wildlife Eye video system. Higgins and his team planned to continue the project over a five-year period, periodically returning to camera-trap sites every ninety to one-hundred-twenty days to retrieve images and replenish batteries.

Higgins and Colyer returned for their first camera maintenance trip in July 2006. They found numerous photos of black bears (*Ursus americanus*) but no photos of the target species. They also discovered that their cameras had been, in all cases, damaged, and in some cases completely destroyed, by black bears. This necessitated protecting all subsequently deployed camera traps in heavy metal "bear boxes" secured with chains and padlocks. This made the work of deploying camera traps far more difficult, but it was necessary to keep the expensive

equipment from being destroyed by black bears, attracted as they are to a variety of petroleum-based products, including fuels, oils, plastics, and rubber (<http://westernwildlife.org/black-bear-outreach-project/faqs-2/>). Unfortunately, an unintended side effect of having to use the cumbersome “bear boxes” was that the normally small and largely unobtrusive camera traps suddenly became very noticeable, difficult to camouflage or conceal, and intrusive in the wilderness environment.

A couple of incidents of interest took place during this 2006 trip that portended future events. On the next-to-last day, Higgins and Dr. Ken Helmer—a Houston trauma surgeon and biologist—reported having a rock, or some kind of projectile, thrown at them as they hiked. On the last night, Helmer also reported to fellow teammates that he had heard some sort of strange wood-impact sounds during the night that originated from two locales approximately one hundred yards apart, south of the cabin site. The sounds seemed to be in response to each other and occurred over a period of hours through the night. According to Helmer, the sounds were sharp cracking sounds that might best be described as loud knocks on wood or trees, or “wood knocks.” Higgins and his team were extremely skeptical about the sounds and were unconvinced that the sounds were of any significance. (K. Helmer, personal communication, December 8, 2014).

Over the next five years, Higgins, Colyer, Helmer, and many of their colleagues, returned to Area X numerous times, hiking to the camera traps—the majority of which the teams had placed in out-of-the-way places and on difficult terrain—performing the necessary maintenance on the cameras, and checking for significant images or video. The teams examined thousands of photos and videos taken by the cameras, only to find that there were no photo-captures or videos of anything beyond the indigenous, recognized fauna. The lack of photos and videos of anything out of the ordinary could reasonably be interpreted as indicating that there were no unknown species in the valley; however, the teams took note of a pattern that repeated itself with almost all trips to the valley. Near the end of their stay on any given trip in Area X, the researchers often documented some sort of unusual activity that involved loud surreptitious bangs on the cabins in which they stayed. Sometimes the bangs sounded as though rocks had struck the cabins, other times they sounded as though they had been produced by an open or fisted hand. Other documented activities included the nearby sounds of large rocks smashing onto rocky creek beds, growls, “whoop” vocalizations, long screams or howls that were distinctly primate in nature, distinct rock “clack” sounds (as though rocks were being banged on other rocks), or in late 2010 “wood-knock” sounds like the ones described by Helmer from July 2006.

Moreover, during the course of *Operation Forest Vigil*, Helmer and Colyer discovered a number of entries in the cabin logbooks written by family members journaling their stays and describing much of the same kinds of activity that Higgins's teams had documented. The cabin logbook entries were made exclusively during the months from May to October and were dated from as far back as 1999. The predominance of summer months for the strange activity was another pattern not lost on Higgins, Helmer, and Colyer, and it would help them in 2010 when they began to consider modification of their research techniques as *Operation Forest Vigil* began to wind down, having failed to secure photographic or videographic evidence of an uncatalogued species residing in the valley.

In November of 2010, Higgins, Colyer, Helmer, and others returned to Area X for a weeklong stay and what became a seminal event, resulting in a turning point for the NAWAC and the organization's documentation approach. During their stay in the valley, as on previous trips, much of the team's time was spent hiking to and from the *Operation Forest Vigil* camera traps deployed in the area. This time however, the entire team experienced the same kinds of sounds that Helmer had first reported in July 2006. The team's skepticism regarding the "wood knock" sounds was shaken. Upon their return home, the men exchanged emails in which they discussed what they had heard and their evolving position on the matter. Higgins started the email chain, which was sent to the entire organization:

Just got back from Area X a few hours ago. We had a good team there. As usual, it seems that time constraints prevent us from really doing as much as we'd like to do once we have dealt with the time-consuming tasks of camera maintenance and such...

I've been going to Area X for ten years. I've been there dozens of times. I've heard vocalizations, found the best tracks I've ever seen, discovered hand prints on vehicles, talked with folks who have seen wood apes, and experienced other forms of possible (in my mind probable) wood ape behavioral manifestations. One thing I haven't come up against is "wood knock" sounds. Until this week.

Honestly, as Daryl Colyer can attest, I've always been rather dubious of wood knocks as a sign of wood ape activity. This week I and others heard, loud and clear, what I can describe as wood knock sounds. We heard them in the daytime and at night. Two that I heard seemed related, with a louder first knock and what appeared to be a reply with a duller sound coming from a farther distance. So, I still don't quite know what to make of the whole deal...

None of these observations constitutes proof of anything, of course, but in our own minds I suppose it can serve to justify our continued investment of time and resources. I wish I could just put in months in the documentation effort, rather than just a few days each year. (A. Higgins, email communication, November 14, 2010).

Brad McAndrews, a medical research biologist, was also part of the team in Area X that week. In reply to Higgins, he offered his thoughts on the matter:

I'd like to personally attest to what Alton has stated regarding the auditory anomalies from this weekend.

Approximately one year ago when Tod Pinkerton and I were hiking the SHNF's Big Creek Scenic Area, we heard two (possibly three) distinct wood knocks. This was the first of such I had ever heard. At the time, and up until this weekend, I have not spoken much about that experience because as many of you know I am very cautious/speculative of such things - those being undefined audible signals, or sounds. This weekend was certainly interesting in the same respect. I'm still trying to wrap my head around it all to be honest.

I experienced three such events in Area X this weekend from Friday night through early Saturday morning. The first "knock" took place Friday night soon after Alton and I turned in and ceased the discussion we were having at the time. As I had just begun to fall asleep, I awoke startled by what I'd call an extremely loud (and possibly "close") knock. My perspective was that this sound was less distinct and sharp than those I had heard in past (and what I would hear later this trip). I'd almost call it an "explosive" wood on wood sound. This singular event took place just prior to midnight and came from what I believe was an easterly direction. I went to sleep thinking that those staying at the east cabin may have been responsible. They state they were not.

*I awoke the following morning and began to clear out the overgrown fenced in area that housed our cabin's fire ring and built our company a fire. After five minutes of sending smoke into the air (blowing northward onto the mountain), Alton and I heard a branch break. Approximately one minute later, this break was followed by a clear wood knock and two additional "knocks" only two or so minutes later. The second and third of the knocks sounded further off and possibly from the same overall perceived direction - from up on the mountain. I hesitate commenting on distance and even direction in a mountainous valley due to variables of origin (*strength and distance of subject*) and perceptive anomalies (*signal "relays" off of terrain and signal speed due to increased*

humidity), therefore I will only state that they appeared to have emanated from the direction of the mountain to the north. That would be all I, and I believe the group, heard during the daylight hours of Saturday, November 13th.*

*Late that night somewhere between 11:30pm and 1:00am, Ken Helmer and I heard at least two or three clearly-defined "wood knocks" from behind the east cabin, and again, up on the mountain to the north. One of these knocks has left me dumbfounded. As we sat around the warmth of our fire pit, we heard an interestingly "clean" and seemingly close wood knock. The reason I felt, and still feel, a bit "dumbfounded" is because of a couple of characteristics. First, the sound was extremely clean, close, and "soft" as if not to make too loud of a noise (that was honestly the impression that I had). Secondly, this was a "dual knock" meaning that there were two identical sounding knocks one after another with only maybe a half second in between the two. The odd thing though, was the tone of the wood knock. It sounded almost *exactly* like a musical instrument... the wood block. The only difference was this sound had a lower tone. A quiet yet sharp wood block type of noise... *knock-knock...* seemed to come at an angle from behind the east cabin maybe only halfway up the slope of the mountain (this was my immediate impression). Ken and I immediately looked at each other. I thought "you've got to be kidding me." It sounded distinctly unnatural given the woods setting and I was a little unnerved as it seemed to be so close and intentional. We sat just there silent until Ken stood up to scan the slope with the thermal scope. My initial thought was to run over and blast the hillside with my flashlight but I refrained from it - I wish I hadn't. Nothing was seen on the thermal.*

When I spoke about this the following morning, Jerry Hestand smiled and said he wasn't going to say anything but that sometime earlier that evening he heard exactly the same thing stating that he thought he heard something similar to a wood block instrument(!). The signal he heard had come from a southwesterly direction and a distance from the east cabin.

*Again, these mountain valleys can easily be deceptive but I'm also not an idiot. It seems to me that *something* is going on that I cannot yet define. I am accepting of the wood ape as being the potential origin for these "audible anomalies" as this would seem to be an efficient and purposeful form of communication. It's decidedly more simple and *subtle* than using one's lungs. I'd like to build more evidence for this (whether supportive or not) by learning more about the local land and potential sources of man-made sound. We're not going to blow anyone's doors away with an abstract on this...*

If you think about this idea - that a wood ape was there among us communicating in an intentionally subtle way to other wood apes - it's a hard pill to swallow. I'm not convinced (that's my hard head showing through) but man am I intrigued. It's a bit disconcerting if you think about it... If true, it's no wonder why the species has not been documented. (B. McAndrews, email communication, November 15, 2010).

Higgins offered a few more thoughts on the matter:

...all alternate possibilities should be considered. As I've stated, it's still hard for me to wrap my head around something that I've tended to dismiss. Now I've suddenly been confronted with it and it's an uncomfortable intellectual position. What else could be going on? I don't accept the possibility that any human (or several of them) snuck in undetected and hiked up the side of that nasty mountain to trick us, and Daryl's insistence that we consider the correlations with our activities should not be discounted. I indicated in my initial post that this sort of thing can not suffice to convince anyone that there may be wood ape activity going on, but internally it may serve to help us in our endeavors if we satisfy ourselves that we've taken appropriate care to eliminate all reasonable alternatives. (A. Higgins, email communication, November 15, 2010).

In the aftermath of this trip, inspired by the prolonged field studies of primatologists, and intrigued by the activity documented by the NAWAC, particularly the enigmatic “wood knock” activity of November 2010, the team began discussing the possibility of conducting a prolonged field survey in the area using a number of multiple teams. Travis Lawrence, a high school math teacher from Splendora, Texas, opened the discussion on the matter in an email to his colleagues:

I've been stewing around an idea for quite some time. I've talked about it over campfires with several of you, but the peculiar happenings observed last weekend in Area X have inspired me to more formal action.

...I don't think there's any place in the United States that's any better than Area X at producing that which we seek. I consider it a great blessing that we have access to such an area. The fact that it is private land and that there are cabins for comfort and security is icing on the cake.

I propose that over the following summer, we conduct an extended research project in Area X. To my knowledge, the longest we've ever stayed at those cabins continuously was

5-6 days. I think we could realistically have people in Area X for at least 30 days straight if we plan well.

We've always said that the documentation of this species was probably going to involve a large amount of money that would fund a long-term full-time in-field research project.

Perhaps we could pull off a long-term full-time research project without any external funding. Instead of 10 people going to X for 4-5 days, perhaps those 10 people could go in groups of 2 for 5 days each, resulting in 25 days of research rather than 5. Plus, smaller groups of people may tend to experience more contact. (T. Lawrence, email communication, November 20, 2010).

Colyer and Higgins also sensed that the organization needed a fresh approach and a bolder more assertive methodology than the passive, mostly unobtrusive *Operation Forest Vigil*. In a follow-up email a week later, Colyer expanded on Lawrence's idea:

I propose that this project be a six-week project, consisting of one team per week. Each team would have no more than three or four investigators. The teams would arrive on Saturday and leave the following Saturday, to be replaced by another team. The effect would be--as suggested by Travis--that there would a constant presence for weeks. Travis suggested 30 days; I am proposing a six-week project.

Objective: Document evidence of a wood ape presence in the areas surrounding the cabins. While it would be good to scour the entire region there for evidence, the objective pertains to possibly luring one or more wood apes back to the cabins for purposes of photo-capturing an individual or actually collecting a specimen, whichever the team is comfortable with and able to execute under the circumstances.

Each team would need to be equipped with night vision, thermal equipment, and a couple of camera traps for cabin sentry duty. During the day, search and document hikes would be conducted. During the night, stake-outs will be performed. It will be important for all teams to log EVERYTHING in field journals. Bear in mind that we will have no more than four investigators per week. (D. Colyer, email communication, November 28, 2010).

It was at this point that the NAWAC began to make concrete plans for the summer of 2011. Given the NAWAC's experience over the last decade, with longer stays often resulting in the unusual activity documented by the team—especially after their November

2010 trip—it was reasonable to assume that a prolonged survey might yield interesting results. The Ouachita Project was borne out of this concept.

Hypothesis

The NAWAC refers to the following as the Anthropoid Hypothesis:

An unlisted and furtive species, probably an anthropoid, exists in the sparsely populated and rugged Ouachita Mountain Ecoregion, and is the source of long-standing as well as contemporary reports of a large, primarily bipedal, ape-like animal.

A hypothesis “must suggest consequences that are empirically testable; it should make a prediction that can be checked against reality. Prediction here refers not only to future events but also to what scientists will find if they look for what is suggested in the hypothesis” (Lee, 2000, p. 33). The NAWAC Anthropoid Hypothesis meets these standards: It suggests consequences that are empirically testable, it makes a prediction that can be checked against reality, and it states what scientists will find *if they look*.

To date, for all practical purposes, scientists have not attempted to test the hypothesis that a great ape inhabits the Ouachita Mountain Ecoregion, let alone remote pockets of North America. In a word, they have not *looked*. In fact, if the topic is even considered or discussed at all, most scientists and wildlife organizations have simply dismissed any such hypothesis. “Bigfoot,” “sasquatch,” or the wood ape is merely a cultural phenomenon, an imaginary byproduct of “how people deal with the unknown,” and demonstrative of “how powerful belief is in governing our perception of what is real” (Daegling, 2004, p. 4). But such assertions do not test the hypothesis; they merely cast it aside as not being worthy of investigation.

Proceeding on Feder’s assertion that a hypothesis must go beyond observation and hypothesizing (2001), Bindernagel proposes some “if...then” statements that can be applied to the Anthropoid Hypothesis:

If the [wood ape] is corporeal, then it will leave tracks in soft substrates such as mud or wet sand.

If the [wood ape] is a great ape, then it will leave tracks resembling those of a primate.

If the [wood ape] is a great ape, then it will exhibit great ape anatomical features and demonstrate elements of great ape behavior. (2010, p. 110).

To date, there has been no coordinated, comprehensive, effort on the part of the scientific community to explore the matter. Hopefully this paper will serve to encourage scientists and wildlife organizations to move beyond mere talk of how and why such a hypothesis is biologically impossible (a demonstrably incorrect assertion in itself), or implausible, and to actually conduct or support investigative, persistent, and objective field work truly designed to test it, letting the NAWAC example serve as a model. The Anthropoid Hypothesis proposes something truly remarkable is waiting to be found, providing that members of the scientific community are willing to demonstrate the audacity and intellectual curiosity to actually search for it.

Methods

Objective: Verify presence of and generate description for an unlisted anthropoid through collection of independently verifiable evidence (preferably a type specimen) and documentation of behavioral exhibitions in natural habitat through use of participant observations and collection of trace evidence.

All teams and as many individuals as possible kept detailed field journals, recording condition readings (time, temperature, humidity, rainfall, degree of cloud cover, sunshine, speed and direction of wind, etc.), wildlife activity, team activities (regardless of how mundane), field discoveries of target species trace evidence (such as nut-crushing stations, footprints, scat, etc.), and observations of target species. Once teams returned from the field, their field journals were transcribed uniformly into after-action reports. From the onset, teams made active attempts to collect a type specimen relying heavily on big bore rifles or shotguns during daytime and equipped with thermal rifle scopes (in 2013 and 2014) at night.

Foremost among the techniques involved the “Overwatch Tent,” a 10’ x 10’ blind (Figure 1) constructed on the ground or atop an elevated wooden observation deck (approximately 11 feet off the ground), with a canopy tent providing roof cover and walls constructed with sheets of thin black polyethylene film (through which the thermal scopes could penetrate almost as though the plastic was not there). During overnight watches, in anticipation of approaches by the target species, two individuals armed with big bore rifles (Figure 2) equipped with thermal scopes and or a handheld thermal optic provided constant active visual sweeps (see Figures 3, 4, & 5, respectively).

Other methods used during the day were designed to lead to full and prolonged visual contact with the target species and/or to facilitate specimen collection and provide behavioral documentation. These involved remote observation posts, extensive hikes, and techniques of concealment using ghillie suits, mirror blinds (Figure 6), tree stands, and natural blinds.

Teams also attempted to collect ancillary, supportive evidence with techniques and tactics at the discretion of each particular team. Some members made use of GoPro cameras, but found their practical use limited because of limited battery life and often untimely maintenance. Many members kept personal cameras on them during field work but found them difficult to bring to bear during very fleeting wildlife encounters. Use of audio

recording equipment and video recording equipment was sometimes practiced, particularly by investigators who were not active participants in specimen collection. Early on in the project, in attempts to produce footage and/or photographs, teams employed Reconyx HC600, Reconyx RC55, Reconyx RC60, and Plotwatcher Pro time-lapse HD digital cameras (Figures 7, 8, 9, and 10, respectively). During the third year, the teams employed an infrared nighttime digital surveillance system consisting of ten Rugged Cams Sentry 700 HD Infrared dome cameras (Figure 11) enabling nighttime visibility out to 100 feet—deployed all about the primary cabin from which the vast majority of teams based during the project—and a Rugged Cams 960HD DVR system (Figure 12), with a 20-inch RCA monitor, all powered by ten bulldozer batteries kept charged by a solar panel array perched on the roof of the cabin. Audio was recorded using TASCAM DR-40 and Marantz PMD670 digital recorders, and Sennheiser MKE102S/K6 omni-directional microphones (Figures 13 and 14, respectively).

On occasion, teams employed the use of primate playbacks broadcast loudly using FoxPro and custom game calling equipment for purposes of generating responses. Playback sounds ranged from known primate vocalizations such as those of agitated chimpanzees, huffing gorillas, orangutans producing long calls, gibbon whoops, and black howler monkey screams and bellows; to distressed or wounded animals such as white-tailed deer, wild hogs, or rabbits; to purported wood ape recordings. Other sounds used during playbacks included recorded clips of human children laughing and playing, human babies crying; human females screaming, talking, laughing, making odd vocal sounds, and producing sexual moans; and even the sounds of twelfth-century *a Capella* choral chants. Individual investigators, on occasion, produced their own sounds. Baseball bats and other solid pieces of wood were employed by team members throughout the project to produce wood-knocking sounds.

From time to time, the teams deployed “string traps” at heights of five to seven feet up across an area to track movement and determine movement patterns. The string traps would be checked the next day to see if the strings had been broken (in many cases they were indeed). On occasion, the string traps were equipped with small fishing hooks in the hopes of trapping hair from tall passers by.

Results

“Wood Knocks”

From the first days after the first team’s arrival at the study site in June 2011, NAWAC teams began repeatedly documenting—as in November of 2010—curious, frequently loud and relatively close, wooden-in-tone audible signals occasionally in response to team members loudly striking trees with baseball bats or firewood logs (Figure 15). These “wood knocks,” through repeated observations and experimentation, indicated to team members the presence of something intelligent that not only had the ability and cognizance to respond to NAWAC acts designed specifically to incite such responses, but also to spontaneously and repeatedly produce such signals upon the arrival of new personnel at the site or upon the exit of personnel from the site. Moreover, the knocks often rang out during the night immediately after team members retired to the confines of the cabin or tents, or conversely, immediately after team members exited the cabin or their tents in the morning.

There were still many other times when the knocks sounded out from different directions one (or multiples) right after another, apparently in response to one another, or sometimes precipitating or following other events documented by NAWAC observers, such as rocks striking the cabins, or the sounds of large animals moving loudly about the rocky mountainous terrain directly above the cabin area, or large trees falling loudly and close to the base cabin. Sometimes, when NAWAC observers attempted concealment techniques away from the immediate cabin area, the knocks rang out from close proximity as if to suggest team members were not quite so concealed as they had thought. Most often the knocks were singular, but on occasion consisted of double or triple knocks in rapid cadence, and sometimes in response to other double or triple knocks, or even in response to team member-produced double or triple knocks.

The first example of multiple knocks clearly in response to other knocks was documented by NAWAC team members Mark McClurkan and Travis Lawrence. Both McClurkan and Lawrence are lifetime outdoorsmen/hunters and hold degrees in animal sciences and mathematics, respectively. McClurkan and Lawrence were part of the second team (designated team Bravo) of “Operation Endurance” (the NAWAC’s first prolonged spring-summer field survey in the valley in 2011). The first team had arrived on site on June 4 and had been relieved by McClurkan, Lawrence, and Bill Coffman on June 11. The following is adapted from the men’s after-action report:

02:40 – The team heard a “series of definite wood knocks.”

The first knock came from the same vicinity of the “whoop” that had been in response to McClurkan’s “whoops.”

Perhaps one or two seconds later, the team heard a “double wood knock” from the north-northeast perhaps a few hundred yards away.

One to two seconds later, the investigators heard another closer “double wood knock” from the northeast by the shed.

A few seconds later came a “single wood knock” to the south of the men’s cabin from a few hundred yards away.

The team was dumbfounded as the knocks—all in response to one another—happened within a span of ten seconds. (Adapted from Operation Endurance Bravo team after-action report from June 16, 2011, unpublished.)

Another similar event occurred July 2, 2013, as Brad McAndrews—initially among the most skeptical of “wood knock” sounds—and Jordan Horstman, a graphic designer, conducted night time overwatch in the overwatch tent. The two men recorded in their field journal a series of events very similar to what McClurkan and Lawrence had observed two years earlier:

01:40 – McAndrews and Horstman heard a loud wood knock to the east near the middle woods shed.

Seemingly in response, the men heard a loud metal bang to the south.

01:50 – The sound of a “musical, clear” wood knock came from the west. It was apparently answered almost immediately by a wood knock from the east.

02:32 – The men documented a “sharp, loud” wood knock that rang out from the north mountain.

Five seconds later, a more dull-sounding wood knock followed from the east.

Ten seconds later, the men heard three loud wood knocks from the mountain to the north (the same origination point as the first one).

Twenty seconds later, there was a wood knock from the west.

McAndrews wrote in the journal: “Amazing. Six wood knocks in thirty-five seconds from three locations. How is this possible? The apes must harbor the ability to plan for future events by strategically carrying tools (rock or stick) for communication. It’s as if they have triangulated the area immediately around the [base camp cabin].”

02:37 – The men heard yet another wood knock from the east; they described this one as “sharp.”

Horstman wrote in the journal: “The apes must be communicating something...but what?” (Adapted from Operation Relentless Juliet team after-action report from July 2, 2013, unpublished.)

On July 6, 2013, just a few days after the events documented by McAndrews and Horstman, Daryl Colyer and Travis Lawrence also documented a similar event while on nighttime overwatch. The following is adapted from their after-action report:

03:17 – Lawrence and Colyer heard a series of wood knocks.

The first one came from the west woods.

Thirty seconds later a knock rang out from the south.

Five seconds later the men heard another wood knock from the west.

Ten seconds later a wood knock from the south answered. (Adapted from Operation Relentless Juliet team after-action report from July 6, 2013, unpublished.)

What follows next is an example of responses to the knocking or tapping of an NAWAC researcher, or perhaps an example of mimicry involving knocks or taps. Responses came in the form of taps on rocks and taps on trees or wood. Brad McAndrews and Jordan Horstman described the interesting exchange in their field report:

19:20 – As planned, McAndrews and Horstman arrived in the area where other team members had had visual contacts. Horstman carried with him a small wooden baseball bat for knocking.

19:30 – Back at base camp, Higgins heard a loud but seemingly distant knock from far to the west.

19:35 – Horstman and McAndrews heard a loud and clear wood knock to the west perhaps 100 yards away. McAndrews wrote in the field journal, “We must have been seen approaching from the west.”

19:40 – Horstman produced a wood knock on a small tree. Almost immediately, “soft wood tapping” sounds came from the woods to the southeast. McAndrews could not hear the tapping sounds.

19:45 – McAndrews whistled and made a “click” sound with his tongue. Both men heard a similar loud sound seemingly in response to McAndrews’s from the woods immediately south.

19:48 – While down on his hands and knees down in the cove (attempting to remain concealed and difficult to see), Horstman began tapping softly on a tree with the small baseball bat in response to the tapping sounds he had heard. More soft wood taps sounded out from the woods, seemingly in response to Horstman’s taps.

19:50 – Horstman moved slowly and hid below a tall berm. He produced more soft tapping sounds like the ones he had been hearing. He heard more of the same from the south woods, apparently in response to his own.

19:51 – Both men heard heavy bipedal footfalls and movement from the south, followed by a prominent “huff” and exhale sound.

19:52 – A wood knock resonated from the southeast of the men no more than 80-100 yards away.

19:53 – McAndrews approached Horstman's position at Horstman's insistence. The men felt vulnerable. Horstman ceased tapping. The other tapping from the south woods also ceased.

20:05 – McAndrews moved to the north for a better vantage point. Horstman resumed tapping sounds. Immediately upon Horstman's resumption of tapping came more tapping from the south woods.

20:15 – The men heard heavy animal movement to the northeast, followed by more tapping from the northeast. There were now two sources of tapping other than Horstman: one from the south and one from the northeast.

20:20 – Conditions: The temperature was 70° F.; partly cloudy.

20:28 – With daylight quickly fading the men decided to displace and return to camp. (Adapted from Operation Relentless Juliet team after-action report from July 4, 2013, unpublished.)

McAndrews later provided still more elaboration on the incident:

*Today some events unfolded that were not originally planned. Had it not been for Jordan's unique response to the situation, I am confident that the evolution of these events would not have happened the way they did. The plan was to have Jordan carry out a sweep of the area through the thick stuff and position himself in a sitting position. I manned a position west of Jordan's position which offered me good visibility and concealment. Jordan actually volunteered himself as bait. After producing one wood knock, I saw Jordan break protocol and begin rapping randomly on various elements - stone, tree roots, foliage. What I didn't know at the time was that Jordan had heard a series of tapping responses after making his wood knock. Jordan answered by mimicking exactly what he heard. Fast forwarding a bit, I would later approach Jordan (at a completely new position) and ultimately experienced the same thing. Only this time the subject would repeatedly mimic Jordan's unique series of knocks/taps/raps. This probably happened 30 or more times over a span of 25-30 minutes. During this time we recorded two wood knocks, a very loud mouth "click" in response to mine (I only clicked on 1 occasion and the subject answered me in about 2-5 seconds), and heavy bipedal footfalls that approached Jordan *between* two individual series of taps. The subject also made a loud "huff-exhale" as it walked to the north.*

I have to tell you this also. Basically, I thought Jordan was making an error in judgment. I was I wrong. I approached Jordan's position, while staying concealed, and heard it over and over again for myself. It is incredible what was actually taking place. Perfectly mimicked series of taps in immediate response to Jordan's rapping pattern. These were CLEARLY knocks created in response to Jordan. The sounds were close (20-25 yards), some dull sounding and all sounded somewhat purposefully discreet. Clear wood on wood or rock on wood sounds.

Sunset had passed over an hour prior and dusk was nearly gone. We chose to vacate but it was hard to do given the experience and circumstance. (B. McAndrews, NAWAC private message board, July 7, 2013.)

It should be noted here that orangutans have been documented producing mouth pops or clicks: <https://www.youtube.com/watch?v=TQe3KmNtUMs>

There were other examples of team members attempting to elicit wood-knock responses by first producing their own wood knocking sounds, only to actually document responses within seconds or minutes. Almost immediately upon commencement of the Ouachita Project, Daryl Colyer and Michael Mayes, a teacher and coach, began documenting knocking responses to their own wood knocks:

18:00 – NAWAC Investigators Michael Mayes and Daryl Colyer arrived at the cabin. The two unpacked Colyer's truck and put out bug bombs in the cabin.

20:45 – After sitting quietly on the porch and adjusting to the environment, Colyer took a wooden softball bat and rapped out 12 wood knocks—2 or 3 at a time with intervals of approximately 1 minute in between—against a sweet gum tree a few feet from the cabin.

21:32 – Mayes and Colyer heard a distinct and loud knock to the southeast of their cabin. The knock came from the direction of what the investigators refer to as “the old homestead.”

21:37 – An extremely loud and clear knock was heard to the north-northwest of their cabin, from the direction of the mountain to the north. The knock was very clear,

marked, and distinctive. Mayes and Colyer estimated that this second and louder knock emanated from a position that was less than 100 yards from their cabin. The sound was very kindred to that of a very thick and large baseball bat striking a large tree. It was an impressive sound that obviously required size and strength. (Adapted from Operation Endurance Alpha team after-action report from June 4, 2011, unpublished.)

Later that month, Alton Higgins and Phil Burrows, an accountant from Oklahoma City, followed the examples of Colyer and Mayes:

22:00 – Higgins and Burrows knocked on a tree with the bat.

22:03 – The men heard a response knock from the northeast of the south cabin.

22:21 – Higgins and Burrows discussed attempting some turkey calls, even though they knew turkeys do not normally vocalize at night; they hoped the calls would arouse the curiosity of wildlife.

Conditions: Very calm.

22:30 – Burrows did another knock on wood.

22:33 – The men heard a wood-knocking noise that sounded far away from the northwest.

23:00 – The team knocked again. They detected no immediate response.

Conditions: Chilly, very quiet, calm, 68° F.

23:30 – The team did another wood knock. There was no immediate response. The night was extremely quiet. (Adapted from Operation Endurance after-action report from June 22, 2011, unpublished.)

Two days later on June 24, 2011, Burrows documented interaction with an unseen knocker:

09:08 – Burrows heard a wood knock sound from what sounded like the creek ponds south of the east cabin. Burrows took the baseball bat and answered by hitting a post.

From 09:08 to 09:13 there was an exchange between Burrows and the wood knocker of four knocks and replies. The second through fourth wood knocks all sounded like they came from the same location to the north of the first one, all three from the direction of the east cabin. Within a minute of the fourth wood knock-like sound came a rock on rock sound, then three more within a three-minute time span.

Burrows answered each time with four rock-on-rock sounds made from the porch of the south cabin. Burrows postulated that the sounds were all “purposeful.” (Adapted from Operation Endurance after-action report from June 24, 2011, unpublished.)

At no time did a team member actually see any of wood knocks produced over the four-year period; however, there were two incidents in which NAWAC observers had visual encounters within seconds of hearing wood knocking, and one incident that involved a visual and then wood-knocking. These incidents were the closest that any NAWAC team members actually came to seeing wood knocks produced. The first such encounter involved Travis Lawrence and occurred July 12, 2012. The following is adapted from the after-action report:

09:30 – Lawrence rose and began preparing breakfast of oatmeal, coffee, and Tang.

10:00 – While sitting on the porch in just shorts and a shirt, Lawrence caught a visual glimpse of a large reddish-brown animal creeping through the woods about 40 yards to the south quadrupedally; the animal was traveling east to west. For about two seconds, Lawrence saw the flat reddish-brown back of the large animal. At first, Lawrence thought the animal to be a cinnamon-colored black bear, but then thought the back was too flat. A bear would normally have a humped back. Without being dressed to investigate the visual, Lawrence grabbed his rifle and continued watching the woods.

10:05 – Lawrence heard an eerie, attention-grabbing sound about 50 yards to his southwest, right behind Paul Bowman’s Kifaru teepee, still there from the first week of Operation Persistence. The sound was an “eerie moan that culminated in a low pitched growl,” and was not overly loud. The sound lasted about 4-5 seconds. As soon as the growl ended, Lawrence heard a “sharp musical wood knock” from the

same location. As soon as Lawrence heard the wood knock, he knew instantly that the animal he had seen was a wood ape on all fours.

Lawrence immediately called out to Taylor, who was awake, but still inside lying on his bed and told him what he had seen and heard. The men then suited up and investigated the area, but found nothing of interest. (Adapted from Operation Persistence Juliet team after-action report from July 12, 2012, unpublished.)

The next incident occurred the next year, July 5, 2013. The following is adapted from the after-action report of Juliet team from Operation Relentless:

10:30 – All the men were gathered and saying goodbyes at the back of Colyer’s truck—parked in front of and facing the cabin door—when they heard two wood knock sounds from the mountainside above the bottleneck to the east. The men all immediately looked that way. Colyer continued to look there as the others resumed talking. Colyer saw a “vertical, black figure” creep through an opening in the vegetation heading down the slope beside a downed log toward the bottleneck probably 70-75 yards to the east. Without a good frame of reference, the figure appeared to be at least the size of a man. Colyer immediately grabbed his rifle, quickly walked east, and told the others, “Gentlemen, I just saw something black...” The other men just stood and sat there.

The men heard a rock thrown through the leaves and tree branches as Colyer took off. Lawrence took note of the rock-throw and said, “That’s all I need...” Lawrence grabbed his rifle and took off east down the trail.

Learning his lesson from when he had pursued an animal earlier in the week, Colyer entered up onto the slope. About ten yards up the slope, Colyer turned east and quickly moved toward the thicket to the east where he heard much loud movement and thrashing. Suddenly, several rocks and nuts were thrown his way from up higher on the mountain. Colyer paid little attention to the incoming airborne objects; he was focused on the “vertical, black figure” that now he could only hear as it moved and thrashed through the dense foliage attempting to escape him. Colyer moved as quickly as possible through the vegetation. At that time he heard McAndrews, Horstman, and Higgins talking loudly and excitedly back at camp. Rocks were being thrown above the base camp cabin. Colyer then heard the loud thrashing replaced

with distinct clear footfalls of an individual sprinting away (Adapted from Operation Relentless Juliet team after-action report from July 5, 2013, unpublished.)

The following is adapted from the September 2014 after-action report of Brian Brown's team:

19:26 – With K. Strain on the porch, and the men standing in front of the cabin talking, the team heard and then saw a tree perhaps 50-75 yards to the west very loudly fall. Brown, Colyer, and Falconer could see the very top of the tree moving and falling into the other trees.

Colyer, wanting to try a different approach, took off in a dead sprint toward the falling tree, with Falconer, Brown, and B. Strain not far behind. When Colyer reached the southwestern end of the trail he tore off into the west woods. When he momentarily ceased movement, he could hear displacement and movement well up the mountain slope above him.

Brown and Falconer proceeded toward the west RV along the trail. B. Strain posted on the trail to the north of the west cabin to watch the flanks of his teammates.

19:33 – Meanwhile at base camp, a rock flew into base camp from the middle woods only about 20 feet from K. Strain.

19:35 – As the men continued to investigate to the west, Colyer continued to hear movement and displacement up on the slope above him. He took up a concealed position to observe.

At base camp, K. Strain was hearing “lots of movement” on the mountain behind the base camp cabin.

19:37 – On the trail northwest of the west RV, as they looked north and attempted to locate the downed tree, Brown and Falconer heard a clear wood knock behind them to the south from the creek area. They instinctively turned to look that direction. Brown observed, directly south of the west RV at a distance of perhaps 50-60 yards, a quick “flash of large movement” from left to right from one tree to another before he observed a dark, large, upright figure—presumably a wood ape—

halfway emerge from the behind the tree to seemingly peer at him and Falconer. Falconer had much less of a definitive view than did Brown, having seen what he described as “large motion.”

Brown uttered, “*Oh shit!*” Then he loudly called out to Colyer, “*Darryl! Come to the fifth wheel!*” Falconer shouted to Colyer, “*We have an animal!*”

Upon hearing the men, Colyer responded loudly that he was on his way and through the dense understory quickly began making a beeline for his teammates. He was 100-150 yards away from the men when the men had called for him and it took him a minute or more to reach them.

19:39 – Colyer reached Brown and Falconer, never stopping his forward movement. As he moved past Brown, Brown very briefly told him what had happened. Colyer tore off to the south on the trail after the animal. Brown followed behind Colyer; Falconer moved to join B. Strain.

Colyer continued on a semi-sprint south; he could hear crashing, thrashing, and loud movement sounds ahead of him on the trail. He continued to push, momentarily hiding behind trees to observe and listen, his rifle at the high-ready at almost the entire time.

Brown yelled out for Colyer to check on his whereabouts and his well-being. Colyer, knowing the animal had escaped, loudly responded to Brown that he could still hear the animal moving away to the south.

After a good distance of active pursuit, Colyer turned around and regrouped with Brown. Colyer knew that chasing an ape was most likely a fruitless endeavor; his hope was that by doing so, the apes might be further goaded into other acts that would betray their presence.

19:50 – The men returned to base camp and K. Strain debriefed them on the incident. The team estimated that there had been at the very least two animals in the area: One must have fled to the north on the mountain and another fled to the south. (Adapted from Operation Tenacity Quebec team after-action report from September 10, 2014, unpublished.)

A less common type of wood-knocking documented by team members consisted of more complex wood knocking patterns of as many as six to ten consecutive knocks in cadence, one right after another in close proximity to the cabin area:

06:10 – Mayes awakened to hear a series of six to eight knocking noises that were in close proximity to the cabin. The knocks were rhythmic with one to two seconds between them. The knocks seemed to be produced using wood. (Adapted from Operation Endurance after-action report from June 5, 2011, unpublished.)

Other teams, particularly in 2014, documented similar wood-knocking patterns consisting of eight or as many as ten consecutive knocks that were rhythmic or in cadence. (Adapted from Operation Tenacity Alpha and Lima team after-action reports from 2014, unpublished.)

The teams also documented knocks that precipitated the arrival of NAWAC personnel just minutes before they drove or hiked into the area from the west, or immediately after they had left, as documented by remaining team members:

22:50 – The team heard a distant wood knock to the west.

23:03 – The team heard a single wood knock from the southwest perhaps 200 yards out.

23:07 – Colyer heard a vehicle approaching in the distance.

23:11 – Brian Brown and Jeff Eltringham arrived in Brown's truck. (Adapted from Operation Relentless Alpha team after-action report from May 3, 2013, unpublished.)

When Travis Lawrence feigned leaving from the study site and hiked quietly back to the property, he apparently surprised an animal making ape sounds; however, when he left, his exit was punctuated by a wood knock:

11:20 – Lawrence returned to base camp [on foot] to make K. Strain and Burrows aware of his encounter with the huffing animal near the west RV.

11:25 – Lawrence left on foot to hike back to his truck.

11:27 – A rock loudly struck the east shed (K. Strain thought the rock may have been intended as some kind of message for Lawrence).

11:50 – K. Strain and Burrows heard a clear wood knock to the west. Strain believed the knock was connected to Lawrence's exodus. (Adapted from Operation Relentless Hotel after-action team from June 16, 2013, unpublished.)

Three days later, after Lawrence had left the valley for personal reasons, he parked his vehicle over a mile west of the cabins and hiked in using a circuitous route from the south. In the end, it appeared that he was spotted and a possible alert was sounded:

18:00 – K. Strain wrote in the team journal that she heard “the strongest wood knock” that she had ever heard “just 50-100 yards west” of the base camp cabin. She did not know at the time that the knock—based on the experiences of the NAWAC over the last three years—could very well have been a signal that Lawrence had returned.

18:15 – Lawrence (who had taken a radio with him when he left on Sunday) contacted K. Strain via radio from over a mile away to the west. He was on foot and would be attempting to hike in with the element of surprise. He requested that Burrows and K. Strain cause a diversion by hiking to the area of the south cabin, discharging firearms and making noise. Lawrence planned to hike up the creek from the west and approach the west cabin from the south.

18:30 – As K. Strain and Burrows were beginning their hike to the south cabin, it occurred to K. Strain that the ominous wood knock she heard just minutes before was likely a signal of Lawrence's return to the valley. K. Strain radioed Lawrence to tell him about the wood knock and that the apes were likely aware that he had returned.

18:40 – At the south cabin, K. Strain and Burrows shouted loudly, banged on metal, and discharged their weapons repeatedly.

Lawrence continued his hike, moving as quietly as possible, and keenly observing his surroundings.

19:00 – K. Strain and Burrows returned to base camp.

19:16 – K. Strain activated the TASCAM audio recorder.

Conditions: Temperature: 75° F.; humidity at 70 percent.

19:43 Two minutes prior to Lawrence's arrival at base camp, K. Strain and Burrows noted a wood knock to the north from the mountainside behind the base camp cabin.

19:45 – Lawrence arrived at base camp. (Adapted from Operation Relentless Hotel team after-action report from June 19, 2013, unpublished.)

Sometimes, the wood knocking seemed to be in response to work and cabin area maintenance performed by NAWAC team members:

12:05 – Meadows and Lawrence trimmed branches that hung over the base camp cabin to allow more sunlight to reach the solar panels.

12:16 – Having felled a large dead tree in front of the base camp cabin, the men began splitting the logs using the base camp splitting maul.

12:19 – The men all heard a loud, deep, clear wood knock from the south, perhaps no more than 100 yards away. The wood knock was apparently in response to the team's wood splitting activity.

12:47 – As the men continued to split wood using the maul, the men heard another wood knock. This time, the knock came from the west, perhaps 100 yards away. (Adapted from Operation Relentless Echo team after-action report from May 25, 2013, unpublished.)

From 2011 through 2014 dozens of NAWAC teams catalogued literally hundreds of wood-knocking events. Some were similar in nature to the events documented by McClurkan, Lawrence, Colyer, McAndrews, and Horstman, and others were documented by team members who were away from the cabin site, while still others were documented in very close proximity to the cabin as team members slept inside (and were awakened) or carried

out tasks in and around the cabin. The knocks occurred during all hours of the night and day. Some of the knocks were loud and powerful and sounded almost explosive; some of the knocks were musical in tone and sounded almost as if they had been produced using musical wood block instruments (with these types of wood knocks often described by team members as “beautiful” or “musical”); and, some of the knocks were soft or muffled and sounded as though they had been produced using wet or rotted wood. Some of the knocks were recorded on audio and video. A number of the knocks documented by team members were clearly in response to the knocking of team members, but most of the knocks were spontaneous in nature; that is to say the majority of knocks occurred without NAWAC team members having first produced loud knocking noises themselves.

Banging on Metal

Like wood-knocks, the NAWAC early on identified and documented many incidents that involved some sort of noise-making activity that involved metallic impact sounds from throughout the cabin site area. Scattered about the private property near each of the cabins are various metal objects such as piles of corrugated metal, old doors, rusty and dilapidated farm equipment, barrels, fence posts, tools, along with some structures with walls and roofs made up largely of corrugated metal. For anyone or anything desiring to make loud banging sounds, the place offers a smorgasbord of options. The following after-action excerpts in no way represent all the metal bangs documented by the NAWAC during the project; however they do represent most of the best examples (many metal bangs over the four-year period were likely produced by rocks being thrown; the following examples were interpreted by the NAWAC to more likely have been produced as the individuals creating the sounds actually held the tools—whether rock, metal object, or wood—in their hands).

The first such incident involving loud metallic banging occurred shortly after the first team was on site in 2011:

09:00 – Mayes and Colyer heard six consecutive, very loud, and rhythmic “clangs” to the west of their cabin. The two men thought that the sounds were from less than 100 yards away. Mayes opened the door upstairs to look in the direction of the clangs and was immediately greeted by another loud metallic clang. Colyer and Mayes hurriedly got dressed and rushed out to investigate. They could find nothing that they could relate to the clanging noises. The clanging noises were like wood-knocks, except that they were knocks on metal, either with a large rock, or another piece of metal. The investigators’ impression was that the sounds had been produced by

something or someone banging a large rock onto a metal fence post, or possibly—in retrospect—on the gate to the cabin area. The sounds were sharp, distinct, rhythmic, and obviously had great force and strength behind them. (Adapted from Operation Endurance after-action report from June 8, 2011, unpublished.)

A few days later, Tod Pinkerton, degreed in wildlife ecology, and Travis Lawrence, documented another loud metallic banging incident:

22:55 – Pinkerton and Lawrence heard a very loud rap/knock on the gate itself; the two men were certain that the sound was that of wood being struck on the metal gate. (Adapted from Operation Endurance after-action report from June 10, 2011, unpublished.)

Daryl Colyer and Rick Hayes documented similar banging-on-metal sounds the following year:

21:50 – Colyer and Hayes decided to return outdoors.

22:00 – The men heard a loud screaming roar and furious banging on metal to the east-southeast of their camp, probably near the east cabin. (Adapted from Operation Persistence Alpha team after-action report from May 6, 2012, unpublished.)

Later that week, Colyer, Hayes, Bowman, and Helmer documented more of the same:

01:21 – Another rock landed behind the cabin after crashing through the trees.

01:27 – Another rock thud was heard by the team near Bowman's ATV.

01:31 – The team heard metal clanging from the direction of the south cabin. (Adapted from Operation Persistence Alpha team after-action report from May 11, 2012, unpublished.)

The next day, the incoming team of Mark McClurkan, Ken Helmer, and Ken Stewart recorded metal noise-making activity in their team's field journal. The following is adapted from their after-action report:

20:30 – The team heard a rock impact on the shed west of their cabin.

20:36 – The men noted a wood knocking sound from somewhere south of camp.

21:26 – As Helmer went behind the cabin to change the memory card in the Marantz audio recorder, he noted that a rock landed on the back of the shed and rolled off.

23:21 – The men detected “a strong smell” drifting into camp while they were sitting around discussing recent events. The men described the smell as “very musky” and “identical” to odors detected by teams during the previous year.

23:43 – The three men detected “possible green eye shine” and then shortly thereafter they heard a “double rock clack” from the location of the possible eye shine.

23:45 – Stewart and McClurkan heard a “metallic tapping and scrape” sound from the same location as the “double rock clack.” (Adapted from Operation Persistence Bravo team after-action report from May 12, 2012, unpublished.)

Two weeks later, more metallic banging was documented:

23:19 – The team [Paul Bowman, Marvin Leeper, Bill Coffman, and Phil Burrows] observed simultaneous rock-throws: one landed behind the cabin and the other landed near the fire circle.

23:38 – The team heard a “metallic crash” from the vicinity of the south cabin.

23:42 – The team recorded in their journal that they heard a “metallic crash” from the vicinity of the east cabin. (Adapted from Operation Persistence Charlie team after-action report from May 24, 2012, unpublished.)

After two more weeks, Alton Higgins and his team documented more metallic noise-making:

10:00 – Higgins, [Jason] Hill, and Lawrence heard “rock throws, rolling rocks, wood knocks, sounding very close, just above the cabin.” Hill, Lawrence and Higgins went up the mountain to look around, but they did not see anything. A “nearly continuous rumbling, reminiscent of something shaking sheet metal or tin roofing,” drew their

attention. It sounded like it was coming from south of the west cabin. In the process of checking out the noise they “flushed what sounded like a very large animal” very close to where Hill and Higgins flushed a large animal the previous day. The men heard “one big crashing sound, then silence.” They went into the thick foliage to find the source of the sound, but they saw nothing. (Adapted from Operation Persistence Echo team after-action report from June 4, 2012, unpublished.)

The next year, more metal noise-making was documented by NAWAC team members:

19:56 – As the men were sitting out in camp chairs near the fire circle, the men heard a sound to the south that sounded as though someone were dragging a rock or wood rapidly and repeatedly across corrugated metal.

20:00 – Bowman and Colyer went to investigate the sound. B. Strain activated the surveillance system.

20:10 – Near the south cabin, Bowman and Colyer heard a “grunt” followed by a “stick-break.”

20:34 – As darkness came on, Bowman and Colyer abandoned their investigation and returned to the base camp cabin. (Adapted from Operation Relentless Alpha team after-action report from April 20, 2013, unpublished.)

Metal banging, along with weird screaming, rock throws, and the sounds of “large padded feet” were documented in May 2013:

21:58 – The men heard a weird scream from the west cabin, immediately followed by a rock slamming into metal, also from the vicinity of the west cabin.

23:30 – The team heard a rock strike another rock to the east. Their impression was that the rock had been thrown from the mountainside.

23:35 – The men heard a quick “double bang” on metal from the vicinity of the west cabin.

23:40 – Team members heard the sounds of large padded feet sprinting across the trail in front of the west cabin.

23:42 – The men heard another “double bang” on metal on or in the vicinity of the west cabin. (Adapted from Operation Relentless Echo team after-action report from May 25, 2013, unpublished.)

The next day, Daryl Colyer documented a series of metal bangs in his field log as he and Travis Lawrence posted away from the cabin:

17:15 – Lawrence and Colyer set out again. Colyer posted where he had observed the two charcoal animals during Relentless Alpha. Lawrence posted about 40 yards away from Colyer. Both men had radios; base camp monitored a radio as well as Dollens prepared enchilada casserole for the team’s dinner.

17:45 – Lawrence heard a very clear wood knock—the best one of the weekend, as he described it—to the southwest. Colyer did not hear it; neither did anyone from base camp.

17:50 – Colyer radioed base camp to determine if they had been the source of the metal bangs he had been hearing over the last 5-10 minutes.

Meadows replied via radio, “It’s been all quiet here.”

Colyer, surprised, then asked, “You’re kidding, right?”

Meadows: “Negative. All quiet.”

Colyer replied, “Copy that.”

Colyer had heard several loud metal bangs from the east-northeast and he had assumed the sounds had come from base camp. (Adapted from Operation Relentless Echo team after-action report from May 26, 2013, unpublished.)

About three weeks later, while in his tent some 75 yards east of the base camp cabin, Jerry Hestand documented metal banging that kept him awake:

02:15 – Hestand reported that he could hear much noise from the south cabin; he yelled to the others that “*the apes are going ape at the south cabin!*”

Hestand could hear metal being whacked and he could hear what he believed were the lids of the dead freezers by the green shed being opened and slammed repeatedly. (Adapted from Operation Relentless Golf team after-action report from June 14, 2013, unpublished.)

While waiting for teammates Ken Helmer and Robert Taylor to arrive to join him, Mark McClurkan documented metal noise-making on June 24, 2013:

22:02 – McClurkan heard “something very large and metallic” being moved around near the south cabin. The sound reminded him of old tractor parts or some other very thick piece of metal being dragged. (Adapted from Operation Relentless India team after-action report from June 24, 2013, unpublished.)

While providing overwatch, Brad McAndrews logged metallic taps or bangs:

05:48 – McAndrews documented “three successive raps on metal” to the west, probably near the west cabin. (Adapted from Operation Relentless Juliet team after-action report from July 2, 2013, unpublished.)

After conducting overwatch and then attempting to track some wood-knocking sounds, Brad McAndrews and Jordan Horstman logged the following:

09:05 – “Three or four powerful impacts on metal” sounded out from west of the south cabin. The two men wondered if Colyer had awakened and had produced the metal banging sounds.

09:30 – McAndrews and Horstman returned to base camp. Colyer was still asleep in the cabin. (Adapted from Operation Relentless Juliet team after-action report from July 3, 2013, unpublished.)

A few days later, Juliet team again heard metal bangs or taps:

16:40 – Lawrence and Higgins returned to base camp. Their hike had been uneventful.

17:35 – Colyer awakened and joined the men outside.

17:45 – The three men hiked over to the west cabin RV to search for rocks on the roof; they brought the ladder with them. When they passed the west cabin, they heard a wood knock to the south of and close to the west cabin. They looked for the wood knocker but it remained hidden. As the men stood there looking to the south, they heard two metal taps to the south and east. They still could not see what was responsible for the knock or the taps.

The men continued on with their objective and ultimately found four rocks up on the west RV roof. (Adapted from Operation Relentless Juliet team after-action report from July 6, 2013, unpublished.)

On July 8, 2013, Robert Taylor and Travis Lawrence conducted overwatch from the polyethylene overwatch tent:

05:00 – There was a loud metal bang on the east cabin.

05:05 – Another metal bang resonated from the east cabin area.

05:09 – There was more metal banging on the east cabin or one of the east cabin satellite buildings.

05:15 – Yet another metal bang rang out from the east cabin area. (Adapted from Operation Relentless Kilo team after-action report from July 8, 2013, unpublished.)

Again while on overwatch, Lawrence heard more of the same:

05:15 – Lawrence heard five loud metal impacts from the direction of the south cabin. (Adapted from Operation Relentless Kilo team after-action report from July 13, 2013, unpublished.)

Approximately one month later, Alton Higgins discovered evidence related to metal-banging:

18:40 – While checking the string trap by the south cabin, Higgins observed a 55-gallon barrel, cut in half lengthwise, with a rock on top of it. It appeared that the rock had been used to beat the metal barrel/drum to create noise. Lying next to it was a 4-foot, 10-inch metal pipe that appeared to have been recently placed. It lay on top of several pieces of green vegetation.

20:00-20:30 – The men all heard loud metal bangs (three) from the south. (Adapted from Operation Relentless Oscar team after-action report from August 10, 2013, unpublished.)

With the NAWAC's return to the study site again in 2014, the metal noise-making continued:

05:30 – Helmer heard eight successive metal bangs or knocks from the west cabin area. (Adapted from Operation Tenacity Alpha team after-action report from May 22, 2014, unpublished.)

The following month, Travis Lawrence was subjected to the loudest metallic sound he had ever heard at the study site:

03:25 – Lawrence heard “an extremely loud sound,” as if “a refrigerator” had been thrown onto the ground, from the direction of the east cabin. Lawrence later reported it was, “The loudest metallic sound” that he had ever heard in the valley. Lawrence noted that all sleeping team members immediately stopped snoring upon hearing the extreme crashing noise. (Adapted from Operation Tenacity Echo team after-action report from June 16, 2014, unpublished.)

More metal banging was noted the next month:

10:40 – All the men heard a “light metal bang” from the vicinity of the west cabin.

10:45 – All the men heard a series of three “rock banging” sounds come from the vicinity of the west cabin.

10:50 – The men heard a loud “rock on metal” type bang come from the west cabin. (Adapted from Operation Tenacity Hotel team after-action report from July 12, 2014, unpublished.)

One week later, shortly after the next team arrived:

14:07 – The team heard “sharp metal bangs” to the southwest. (Adapted from Operation Tenacity Juliet team after-action report from July 19, 2014, unpublished.)

Later that day:

22:40 – The men returned to the fire circle. Almost immediately after the team had returned, they heard three quick metal bangs from the area of the west cabin. (Adapted from Operation Tenacity Juliet team after-action report from July 19, 2014, unpublished.)

Ten days later, another good example of banging on metal was documented:

16:20 – The men heard two loud bangs on metal from the west woods, with the first being the loudest of the two. Higgins wondered if the metal tree-stand out in the west woods at the base of the mountain slope had been struck. (Adapted from Operation Tenacity Kilo team after-action report from July 29, 2014, unpublished.)

Branch Breaking and Downed Trees

From the earliest days of the Ouachita Project, NAWAC teams documented a number of loud branch or tree limb breaks within close proximity to their quarters. Often when the breaks occurred in the stillness of the night, the sounds of branches or limbs cracking and snapping could be disconcerting.

McClurkan and Lawrence noted a number of loud branch-breaking incidents during their first week on-site:

03:08 – There were several crashing noises, immediately followed by a very loud limb break, immediately followed by a loud banging noise, all from the vicinity of the eastern cabin. (Adapted from Operation Endurance Bravo team after-action report from June 16, 2011, unpublished.)

04:10 – The investigators heard crashes in the wooded area to the east. They then heard what sounded like a large dead limb being ripped off a tree. Once again Lawrence hurled two rocks toward the sounds. There was no discernible effect. (Adapted from Operation Endurance Bravo team after-action report from June 18, 2011, unpublished.)

After McClurkan and Lawrence left, the branch-breaking continued with the next team:

17:52 – The team took extended naps in the afternoon. Burrows awoke first. While sitting on the porch he reported hearing two loud limb breaks from the direction of the east cabin. Conditions: Calm, cloudy, 82° F. (Adapted from Operation Endurance Charlie team after-action report from June 22, 2011, unpublished.)

When McClurkan returned a few weeks later, he heard more of the same:

17:57 – McClurkan heard a tree limb crack and a panicked bird burst from cover to the northwest of the vehicle on the slope of the mountain.

19:08 – McClurkan prepared his sleeping quarters in the bed and rear seat of truck.

19:44 – He heard a loud limb crack near the track way that he had earlier found, followed by three heavy padded footfalls, and a slight rustling sound as the animal apparently entered into brush. The footfalls were less than one second apart and McClurkan noted that they “sounded like a barefooted person running on flat ground.” McClurkan thought these sounds were very similar to the sounds of bipedal running that he and Lawrence had heard as Bravo team. He believed the sounds came from an area about forty yards west of his vehicle. (Adapted from Operation Endurance Foxtrot team after-action report from July 11, 2011, unpublished.)

Camped at a remote site over a mile to the east of the cabin, Colyer and McAndrews later heard limb breaking:

05:15 – Colyer and McAndrews noted a significant limb break due northwest of camp. McAndrews was completely awake at the time of the observation. The sound

awoke Colyer, who heard it despite the use of ear plugs. (Adapted from Operation Endurance Juliet after-action report from August 15, 2011, unpublished.)

As Lawrence attempted overwatch from the cabin, and Higgins slept out in his tent as was his custom, more limb-breaking occurred:

01:45 – The men heard a significant “limb break sound and shrill vocalization” to the south of the cabin. (Adapted from Operation Persistence Echo after-action report from June 8, 2012, unpublished.)

Lawrence had gone off-site to meet and pick up John Dollens and Daniel Dollens. Five minutes after he and the other men returned to the cabin, they heard branch-breaking:

16:35 – All three men heard a distinct “loud limb break” type sound to the northwest at an estimated 100 yards. (Adapted from Operation Persistence India after-action report from July 5, 2012, unpublished.)

The following is adapted from the after-action report of Colyer and his team of five:

01:28 – The team heard a “loud crash or limb break” behind the cabin. Colyer calmly investigated using the ATN “Thor” thermal optic and reported “negative contact.” (Adapted from Operation Relentless Alpha team after-action report from April 27, 2013, unpublished.)

Branch-breaking was quite common in Area X:

12:00 – Chow. While eating lunch, the team observed what appeared to be “a healthy branch from a tree break off and fall to the ground” from up on the slope to the northwest of the base camp cabin. (Adapted from Operation Relentless Golf team after-action report from June 11, 2013, unpublished.)

The next day, Lawrence and Hayes investigated the branch break from the previous day:

18:30 – Lawrence and Hayes hiked to find the “healthy” tree that the team had observed breaking at mid-day on Tuesday, 11 June. Lawrence and Hayes found the tree on the second mountain ledge and identified it as a red oak. The tree was indeed

“healthy” and green and there appeared to be no readily apparent reason for the break. The team wondered if a large animal had climbed the tree and the tree gave under the animal’s weight. While at the tree, the men heard a vocalization from the northeast. They described the sound as “*he wa*,” similar to how a human being might sound just as he or she were sneezing. (Adapted from Operation Relentless Golf team after-action report from June 12, 2013, unpublished.)

McClurkan was alone at the cabin when he heard some loud branch-breaking very close to the cabin:

19:19 – McClurkan could hear “very loud limb breaks” behind the cabin; he noted that it was loud enough to be a small tree. (Adapted from Operation Relentless India team after-action report from June 24, 2013, unpublished.)

Three weeks later, McClurkan was joined by Higgins to document more similar activity:

00:09 – Higgins and McClurkan heard a “loud rock-on-rock” bang from the east, followed by the sound of a limb break from near the south cabin. (Adapted from Operation Relentless Kilo team after-action report from July 12, 2013, unpublished.)

The next night there was more branch-breaking:

00:03 – McClurkan and Higgins heard two wood knocks from the east.

00:34 – Another wood knock from the southwest resonated throughout the compound.

01:22 – The two men heard a branch or tree limb being cracked and broken; this too was from the southwest. (Adapted from Operation Relentless Kilo team after-action report from July 13, 2013, unpublished.)

When Higgins returned the next year, he heard more of the same:

17:59 – The team heard a “LOUD falling limb (tree?) crash” from the northeast. Hestand and Lawrence went to investigate while Higgins scanned the hillside with

binoculars. (Adapted from Operation Tenacity Echo team after-action report from June 15, 2014, unpublished.)

Lawrence heard branch-breaking along with vocalizations that were simian in nature:

13:14 – Lawrence heard a limb snap followed by two gorilla-like huffs from directly north of the cabin. He searched the slope with the thermal scope, but saw nothing. (Adapted from Operation Tenacity Echo team after-action report from June 19, 2014, unpublished.)

Investigators were always certain to rule out possibilities such as winds:

18:00 – Higgins noted that it was “very quiet” and still.

18:25 – In stark contrast to the tranquility he had noted at 18:00 hours, Higgins heard a “big SNAP then a tree fall (large limb?).” Best he could tell, the tree or limb had fallen on the mountain behind and just west of the cabin. (Adapted from Operation Tenacity Lima team after-action report from August 2, 2014, unpublished.)

The teams also documented loud and distinct tree falls, often beginning with creaking, cracking sounds culminating in an explosive crashing noise, again very often within close proximity to the cabin where the teams were based. This particular event seemed to increase dramatically in 2014. The following adapted after-action report excerpts, in chronological order, represent every tree fall event documented by NAWAC teams over the four-year study period. Some may well have been natural and innocuous while others may well have been the result of intimidation or power displays. Most of the events provided here occurred in the context of other activities that the NAWAC attributes to wood apes.

After hearing a number of knocking sounds and rocks zipping through vegetation before striking the ground by their cabin, Lawrence and Pinkerton heard the crashing of tree to the ground:

23:34 – Lawrence and Pinkerton heard a medium to large tree crash to the ground on the slope of the mountain above and behind the northern cabin. (Adapted from

Operation Endurance Alpha team after-action report from June 10, 2011, unpublished.)

McClurkan and Lawrence documented another tree fall a few days later:

16:10 – The investigators heard an extremely loud crashing noise to the northwest. The men believed the noise was likely produced as the result of a large tree being felled at perhaps a distance of seventy-five yards from the investigators. The doe once again alerted. (Adapted from Operation Endurance Bravo team after-action report from June 13, 2011, unpublished.)

McClurkan and Lawrence heard more of the same later that night:

22:38 – The team heard a “huge” crash one-hundred yards to the northwest “like a tree being pushed over.” (Adapted from Operation Endurance Bravo team after-action report from June 13, 2011, unpublished.)

There was more the next day:

03:45 – The team again noted what they were certain were bipedal footsteps to the northwest.

04:15 – The team was startled by the sound of a very loud crashing sound to the northwest; they believed it was the result of an enormous tree falling. (Adapted from Operation Endurance Bravo team after-action report from June 14, 2011, unpublished.)

When McClurkan returned for Foxtrot team, he documented another downed tree:

12:07 – McClurkan observed a rock thrown from the west followed by sounds of large animal movement; the movement was in the same area as the track way he had just found. The rock landed approximately thirty feet west of the vehicle.

12:40 – McClurkan heard a large tree fall to the west. (Adapted from Operation Endurance Foxtrot team after-action report from July 11, 2011, unpublished.)

In July of 2011, the sounds of a loud and large tree coming down awoke Hotel team:

08:00 – When the team awoke, they heard a very large and very distant tree fall to the south-southwest of camp. (Adapted from Operation Endurance Hotel team after-action report from July 18, 2011, unpublished.)

The next entry is adapted from the after-action report of Higgins, Lawrence, and Diaz:

12:30 – The men heard a large tree fall to their south. (Adapted from Operation Persistence Foxtrot team after-action report from June 16, 2012, unpublished.)

The following is adapted from the after-action report of Michael Mayes, Travis Lawrence, and Phil Burrows:

14:13 – After Lawrence and Burrows headed down the trail to the southwest and disappeared, Mayes heard the sound of a “decent-sized tree” cracking, snapping, and then crashing to the ground somewhere on the mountain slope to the east of the cabin. Mayes quickly grabbed his shotgun and went to investigate. Mayes could not locate the downed tree with any degree of certainty. As he searched the slope, he detected no further movement, nor did he make visual contact. After approximately seven minutes of searching, Mayes heard the distinct sound of a rock striking the tin roof of the base camp cabin. Frustrated, Mayes muttered, “You’ve got to be kidding me,” and promptly returned to the base camp cabin. (Adapted from Operation Persistence Golf team after-action report from June 17, 2012, unpublished.)

The following event got the attention of Daryl Colyer, Bob Strain, Mark Gregory, Paul Bowman, and Brad McAndrews:

13:20 – The team heard a very loud tree crash to the southeast perhaps 100 yards away. (Adapted from Operation Relentless Alpha team after-action report from April 29, 2013, unpublished.)

The next week, Gregory and B. Strain heard more of the same:

15:00 – Gregory and B. Strain heard a loud “tree crack and fall” northwest of the base camp cabin. (Adapted from Operation Relentless Bravo team after-action report from May 7, 2013, unpublished.)

As they observed from concealed positions up on the mountain to the east:

17:50 – Colyer and Lawrence heard a nearby sound up the draw of a tree being pushed over and rocks being dislodged. Colyer and Lawrence were on high alert. (Adapted from Operation Relentless Echo team after-action report from May 25, 2013, unpublished.)

Brian Brown and his team heard a tree fell just above cabin to the immediate north. It was an unsettling incident:

01:17 – The team heard another rock sound on the northeast slope.

02:06 – A rock soared through the trees and landed somewhere on the northwest slope.

02:10 – With activity seemingly faltering, the team decided to try to retire to bed again.

Once inside his tent Brown decided to conduct a comms check. He received no reply on the radio after trying three times and then yelled out loudly, “Radio Check!!!!” K. Strain responded. Brown then remembered that he had left his sidearm on his chair back at the cabin. He exited the tent. He proceeded to the east porch where all the chairs had been put up for the night. As he arrived at the porch, from directly north of the east porch, he heard the very loud and unnerving sound of a large tree coming down higher up the slope and crashing. Brown yelled out and instinctively pulled his sidearm. He then lit up the slope with his flashlight. The remaining team members quickly assembled with Brown. Brown and K. Strain saw “orange eye shine.”

02:30 – The team heard a rock loudly strike the west RV.

02:33 – The team heard another rock loudly strike the west RV.

02:37 – A rock now struck the east cabin. (Adapted from Operation Relentless Foxtrot team after-action report from June 6, 2013, unpublished.)

From his tent, Higgins could often hear the sounds of the area better than his comrades in the cabin:

00:04 – Higgins wrote in the field journal that there were “loud noises of vegetation moving” behind the base camp cabin; he wondered if a tree had been toppled. (Adapted from Operation Relentless Kilo team after-action report from July 11, 2013, unpublished.)

Several days later, Higgins again recorded a tree fall in his journal:

23:15 – The two men—Higgins and Burrows—heard a loud repeated series of cracks; they believed it was possibly a tree breaking and falling from the east just beyond the east cabin. (Adapted from Operation Relentless Lima team after-action report from July 15, 2013, unpublished.)

Colyer and Coffman were startled to hear wood knocking and then the sounds of a tree fall just above them on the slope. It was close and disconcerting:

04:05 – The men heard a very loud wood knock, followed about two seconds later by another loud wood knock sound, followed about two seconds later by the very loud and disruptive sound of a large tree cracking and falling to the ground in a loud explosive sound. The sound definitely startled Coffman and Colyer and seemed to originate from up above the OW tower and up near the first ledge. Coffman and Colyer moved very quietly and quickly to scan the woods on the slope to the north, but they could not see anything out of the norm. The woods were now silent. Both men felt an adrenaline rush after hearing the loud explosive sounds pierce the quiet valley night. (Adapted from Operation Tenacity Alpha team after-action report from May 19, 2014, unpublished.)

The next event was observed by five in a team of seven:

18:00 – McAndrews and Burrows returned to base camp. While Brown and the others had sat at base camp, it had been quiet. As McAndrews closed the door on his

truck, the team heard a sizeable rock rip through the foliage behind the cabin and prominently strike the trunk of a tree.

18:10 – Another rock was seemingly thrown from the mountain slope. Mizejewski turned to look and observed a leaf falling from the upper canopy as if broken by a thrown object.

18:15 – Sievert, Eltringham, and Burrows use a giant slingshot provided by Tod Pinkerton to launch rocks up onto the mountain slope north of the cabin. The men launched about ten rocks from golf ball- to near baseball-size, with some hitting trees and others hitting the ground up on the slope. There seemed to be no immediate response to the launching of the rocks.

18:35 – The team heard a rock impact on the west RV.

18:36 – The team heard another rock impact to the northwest of the cabin on the mountain slope.

18:45 – The team began to hear cracking noises from a tree to the northwest of the cabin. Burrows and Brown could see the tree swaying from their positions directly behind the OW tower and the east shed; Wolfe and Mizejewski could see the tree sway from their vantage point at the mouth of the trail to the southwest. In anticipation of a falling tree, Brown dashed around the front of the cabin to retrieve his camera. There was no wind and the woods were otherwise extremely calm.

18:47 – Brown ran around to the northwest corner of the cabin to be closer to the tree and hoping to get a better view with his camera recording. Burrows yelled, “There *is* something in the tree!” Almost before Burrows could finish, Brown said loudly, “There’s something up in the tree...”

The tree partially fell and Brown said loudly, “It just jumped out of the tree!”

The tree fell with an extremely loud crash (Figure 16).

Eltringham called out to Brown and Burrows, “How big was it?”

Brown replied emphatically and loudly, “It was fuckin’ *big!*”

Brown heard something land with a thud—presumably a large animal of some kind—and then he heard prominent movement off to the west away from the tree. (Adapted from Operation Tenacity Bravo team after-action report from May 28, 2014.)

The next night, the same team was present for another tree fall:

23:40 – Brown and Sievert heard another tree fall to the south; Burrows noted it from OW. This falling tree sounded more like a hollowed out old tree, not a healthy one. There were no sharp snaps beforehand as there had been with the other tree. The men only heard the “hollow sound” of breaking and falling. (Adapted from Operation Tenacity Bravo team after-action report from May 29, 2014, unpublished.)

Another tree fell very close to the cabin a few days later:

18:51 – Bass began splitting wood with a splitting maul.

19:02 – As Bass continued splitting wood, Horn walked around McClurkan’s truck and headed toward the wood shed to retrieve more wood for Bass. As Horn approached the wood shed, the men heard “large movement” on the slope. Suddenly, both Horn and Bass froze as a tree began to “move, snap, crack” and tumble down on the slope just below the first ledge. Bass’s view of the tree as it fell was obstructed by the cabin and Horn could not see it because of dense foliage; however, the men knew the approximate location of the tree up on the slope: It was very near the Bravo team tree-fall incident of May 28th and due north of the west shed behind the woodshed. (Adapted from Operation Tenacity Charlie team after-action report from June 1, 2014, unpublished.)

Most of the time, the tree falls could be heard but not seen:

01:16 – All team members heard a “loud large crash” in the middle woods. Graham and Mason scanned the area but they could detect nothing using the thermal scopes.

09:00 – Graham and Mason quickly packed and loaded their gear into their vehicle. McClurkan and Graham agreed that the large crash they had heard the night before during OW was another tree fall. Charlie team had heard/observed two tree falls during its watch. (Adapted from Operation Tenacity Charlie team after-action report from June 6, 2014, unpublished.)

The next day, McClurkan documented his team's third observation of a downed tree:

07:51 – McClurkan was awakened by a loud tree fall. (Adapted from Operation Tenacity Charlie team after-action report from June 7, 2014, unpublished.)

Higgins and his team heard another tree fall within close proximity to the cabin. The thought of a tree coming down on the cabin was in most everyone's minds at one time or another:

14:54 – The team heard a “large tree” come crashing down behind the base camp cabin to the northwest; the men also heard an associated “rockslide.” They immediately went to investigate the commotion.

15:27 – The team returned from checking out the tree fall. It was a dead tree, about 20 inches or so in diameter. It was directly above the tree fall documented two weeks earlier by Bravo team on an extremely steep slope. (Adapted from Operation Tenacity Echo team after-action report from June 16, 2014, unpublished.)

Higgins would hear more tree falls in 2014 than he had heard in all the previous years of his life combined:

01:34 – Upon closing the Xterra hatch, the men heard a tree slowly breaking, perhaps only 25-30 yards to the west of the base camp cabin. The sound was similar to the tree fall earlier in the week; however, this tree sounded smaller.

01:35 – The team heard another loud tree breaking sound from the same location; this time was probably a tree limb rather than a tree. (Adapted from Operation Tenacity Echo team after-action report from June 18, 2014, unpublished.)

Another tree fell dangerously close to the cabin:

20:35 – While K. Stewart was talking to Brian Brown via cell phone (using a cell phone signal booster), providing a status report, a very large, live, apparently healthy, black walnut tree, approximately two feet in diameter, fell with great noise. The men were quite startled by the sudden explosive noise created by the felled tree. K. Stewart exclaimed, “What...the...hell.....” To Brown, on the other end of the call, it sounded like a rifle shot.

The tree was in the west woods only about 40 yards or so from the cabin. It was in line with the wide north-south trail/clearing that exists across from the northeast corner of the fence around the west cabin. The air was calm.

The team went to investigate the fallen tree. While the team was checking out the tree, a rock hitting metal type sound was heard from back at the cabin.

20:58 – After returning to camp, Lawrence and Higgins heard an “Ohio Howl” type sound coming from a distance to the south. Shortly thereafter a rock-on-tin type sound was heard coming from the south cabin.

21:43 – The men heard yet another falling tree from the west. The team speculated as to whether settling of the giant walnut tree could have caused it. (Adapted from Operation Tenacity Echo team after-action report from June 19, 2014, unpublished.)

The next day Higgins and his team investigated the felled walnut tree:

11:01 – The team left to investigate the tree fall from the previous night. The team estimated the diameter of the tree to be 19 inches. The tree’s height was 80 feet. There was no indication of disease or damage (Figure 17). The smaller tree fall was also investigated. Based on the position of the tree’s limbs on top of grass and other vegetation, it was clear that the tree had fallen very recently. (Adapted from Operation Tenacity Echo team after-action report from June 20, 2014, unpublished.)

Travis Lawrence was alone at the cabin awaiting the arrival of his teammates when the following occurred:

14:40 – Lawrence heard a sound from the middle woods, approximately 75 yards to the southeast, that sounded like a “small tree being broken and falling over.”

Lawrence estimated the tree to have been no more than six inches in diameter. This caused several squirrels to erupt in displeasure. (Adapted from Operation Tenacity Golf team after-action report from June 29, 2014, unpublished.)

Higgins and Lawrence were at the cabin with yet another team when they observed a partial tree break:

14:30 – All the men heard and saw the top of a large tree break and begin to fall around the first ledge just north of the base camp cabin. The large top portion of the tree was left dangling in the air. The men immediately had eyes and reticles on the tree. The men watched the tree for several minutes. (Adapted from Operation Tenacity Hotel team after-action report from July 8, 2014, unpublished.)

The next day another tree fell just to the east of the cabin up on the slope:

16:00 – All team members heard a loud “rock on metal” type impact sound come from the area of the west cabin.

16:05 – As the men were still talking about the loud sound they had just heard, all men saw and heard a large tree fall from the mountain slope into the bottleneck to the east of the base camp cabin. The men were at the tree within thirty seconds of the fall and neither heard nor saw anything suspicious upon arriving. Satisfied that there were no apes in the immediate area, the men carefully examined the tree that fell over.

The tree was a large sweet gum that had long been dead. It was approximately 18 inches in diameter, 50 feet tall, and was broken 6.5 feet from the base. The tree was rife with moss on its north side and had shelf fungus growing up a large portion of its trunk. (Adapted from Operation Tenacity Hotel team after-action report from July 9, 2014, unpublished.)

Helmer and Higgins attempted to elicit a response by playing angry chimpanzee vocalizations:

15:57 – Helmer had just finished playing angry chimp calls when a tree loudly crashed to the north of his and Higgins’s position. The Hammers were at base camp and were alerted when they heard the loud tree crash. Colyer, at his position at the base of the mountain, instantly sat up when he heard the loud crash. He immediately and quickly began moving toward the sound. (Adapted from Operation Tenacity Juliet team after-action report from July 21, 2014, unpublished.)

Immediately after Phil Burrows had completed his overwatch and climbed onto his cot, he and his teammates Colyer and Higgins were startled by a tree crash that was close to the cabin:

03:33 – All three men were alerted by the extremely loud crashing sounds of a large tree coming down very near the cabin. (Adapted from Operation Tenacity Juliet team after-action report from July 25, 2014, unpublished.)

Over the next week, much of it spent alone on-site, Alton Higgins observed and documented more tree falls than any other NAWAC team member to date:

17:25 – Higgins heard the distinct sounds of a tree falling somewhere east of the cabin.

17:33 – Higgins went east to investigate and found that a tree adjacent to the bottleneck trail had fallen, or had been felled, south across the path at about the halfway point (Figure 18). The tree was broken about a foot above ground and had an 8-inch diameter at breast height, or d.b.h. The tree was alive and looked to be about 30 feet or so tall; it was difficult for Higgins to discern with certainty in the mass of vegetation. Higgins noted that the air was “perfectly calm.” To Higgins’s recollection, this was the seventh tree that had fallen within close proximity to him while he had been on site. (Adapted from Operation Tenacity Kilo team after-action report from August 1, 2014, unpublished.)

13:02 – Higgins heard another tree fall behind the cabin.

13:10 – With his rifle and sidearm Higgins moved up the slope to investigate the tree fall. He watched as the tree made a few settling moves toward the ground. The tree was at the first ledge just a little west of the sheds on the west side of the cabin.

Higgins noted that “this was now at least the eighth tree fall” that he had noted in close proximity to him this summer. The slope was very steep leading to the tree, so Higgins decided not to risk injury by climbing up to get a closer look. He was able to determine that the tree was “a live tree.” (Adapted from Operation Tenacity Lima team after-action report from August 3, 2014, unpublished.)

17:47 – Higgins heard yet another tree fall or large tree limb break—he was uncertain which— in the west woods. He estimated the distance to be around 50 yards away. (Adapted from Operation Tenacity Lima team after-action report from August 3, 2014, unpublished.)

17:21 – Higgins heard another tree fall from the mountain slope “a little west of the cabin.” Higgins noted that the fall “sounded like it was in line with other recent tree falls.” (Adapted from Operation Tenacity Lima team after-action report from August 4, 2014, unpublished.)

12:30 – Higgins briefly returned to camp to get a seat cushion. At that time a tree fell in the middle woods.

12:35 – Higgins went to investigate the middle woods and look for the downed tree, but he could not locate it. As he approached the south cabin from the east, he heard “a high-pitched impact” followed by a “more traditional sounding wood knock.” Higgins entered the woods just west of the south cabin to see if he could observe any apes in the area, but he saw nothing extraordinary after watching for about an hour. (Adapted from Operation Tenacity Lima team after-action report from August 7, 2014, unpublished.)

When Travis Lawrence joined him, the tree falls continued:

19:04 – The men heard a “tree break” from the mountain slope. The men heard “loud cracking,” but they did not hear the tree falling through the vegetation. Since Higgins had initiated Lima team six days ago he had aurally observed over one-half dozen tree falls and loud limb breaks. (Adapted from Operation Tenacity Lima team after-action report from August 8, 2014, unpublished.)

09:20 – The men heard a “BIG, explosive, loud cracking-smashing-to-the-ground tree fall” from the south. It sounded close. Lawrence would later write regarding the matter of the numerous trees falling or being felled in the study area:

We've heard lots of tree falls in Area X over the last four summers and reservedly ascribed many of these occurrences to the apes. Well, I've spent much more time in the East Texas woods all my life than I have in the study area and I've still yet to hear a large tree naturally fall on a calm day in East Texas. I've heard this probably a dozen times in Area X over the last four years. (Adapted from Operation Tenacity Lima team after-action report from August 9, 2014, unpublished.)

While Andrew Hein, Dave Cotter, and Travis Lawrence loudly broadcast predator calls, Gene Bass remained at camp and reported the following:

20:45 – Back at base camp, Bass heard a distant tree fall to the northeast. (Adapted from Operation Tenacity Mike team after-action report from August 11, 2014, unpublished.)

A few days later, the team documented another loud tree fall:

20:35 – Hestand heard a tree fall to the northwest; Hein did not hear it, probably because of the noise he made as he hiked.

21:20 – Hein hiked up the trail to meet up with Hestand. The two teammates discussed what they had observed—whistling, the loud rock-clacking, a tree fall, the low moan—and decided to hike back up to the dry creek bed. (Adapted from Operation Tenacity Mike team after-action report from August 15, 2014, unpublished.)

From the field journals of Hayes and Burrows:

23:48 – The men heard a tree fall—or being felled—to the south. (Adapted from Operation Tenacity November team after-action report from August 20, 2014, unpublished.)

11:40 – Hayes heard a tree cracking and falling to the west; this noise apparently caused a deer to flush from the area. (Adapted from Operation Tenacity November team after-action report from August 22, 2014, unpublished.)

Blake Kellum, Kathy Strain, and Bob Strain heard a tree come down just behind the cabin:

23:55 – As the three sat on the porch talking, Kellum mentioned smelling a “wet horse smell.” Immediately after he had picked up his shotgun and turned on his flashlight, the team heard a very loud “*BOOM*,” as a tree crashed down on the mountain slope not far behind the cabin. Kellum and B. Strain immediately went around the cabin to investigate the tree crash. (Adapted from Operation Tenacity November team after-action report from August 29, 2014, unpublished.)

The last team of the project heard and saw a tree crashing down (shortly afterward, while investigating the downed tree, Brian Brown observed a large, dark upright figure peek out from behind a tree):

19:26 – With K. Strain on the porch, and the men standing in front of the cabin talking, the team heard a tree perhaps 50-75 yards to the west very loudly fall. Brown, Colyer, and Falconer could see the very top of the tree moving and fall into the trees.

Colyer, wanting to try a different approach, took off in a dead sprint toward the fallen tree, with Falconer, Brown, and B. Strain not far behind. When Colyer reached the southwestern end of the trail he tore off into the west woods. When he momentarily ceased movement, he could hear displacement and movement well up the mountain slope above him. (Adapted from Operation Tenacity Quebec team after-action report from September 10, 2014, unpublished.)

Rock Throwing

From the first teams in June 2011 through the last teams in September 2014, observation and documentation of rock-throwing remained almost constant. Many teams documented dozens of rock throws; a few teams documented over 100 rock-throws during their watches; and, one team documented almost 250 rock throws during its one-week survey. Over the four year period, NAWAC teams conservatively documented over 1000 rock-throwing incidents. Some of the rocks were visually seen by team members to fly through the air and strike a cabin roof or a satellite structure or land on the ground right beside them. Other

rocks were heard zipping through leaves and limbs before striking the cabin roof or landing close to team members on the rocky ground. A few team members were actually struck by rocks. Many of the rocks were relatively small (approximately the size of coins); a number of the rocks were quite large (the size of tennis balls, baseballs, or softballs); still other rocks were extremely large (the size of basketballs or larger).

Sometimes, NAWAC researchers actually exchanged rock-throws with unseen parties that were able to maneuver and throw rocks in total darkness while on the rocky, densely-forested, steep mountain slope behind the cabin. Although the researchers used headlamps and flashlights just to find rocks to throw, the rock-throwers up on the mountain apparently needed no such augmentation.

Many, if not most, of the rocks came from areas where the terrain is flat (the cabins are situated in a valley that is very rugged but relatively flat). None of the structures are located on the slope of the mountain or are located directly adjacent to the mountain slope. The structures sit on flat but rocky ground and range in distance from the mountain slope anywhere from as close as 25 yards to as much as 200 yards. The cabin from which the teams operated most of the time is situated closest to the mountain at a distance of about 25 yards away,

The mountain slope to the north has no cliffs or overhangs; it varies in incline from (estimated) 30 to 50 degrees at different locations. The slope is heavily covered with dense forest, vines, briars, an abundance of downed logs, and big rocks. With extensive testing, NAWAC team members long ago ruled out any remote chances of rolling rocks that could conceivably roll down the slope any significant distance simply by force of gravity. Any rocks that roll or become dislodged only roll or tumble down the slope perhaps 10-15 feet at the most. The odds of any rock rolling down the slope only by force of gravity, making minimal contact with vegetation and debris on the mountain slope, and then defying gravity to propel upward into the air, and strike buildings with roofs that are 10-20 feet high is absolutely impossible.

Moreover, it is very difficult for any NAWAC team members—even those with the best of arms—to throw rocks from as far as 40 yards away and hit the roofs of the cabins. It is very difficult for humans to maneuver on the slope—particularly at night when it is almost impossible—due to the incline, the rocky ground, and the degree of forest and forest debris that litters the slope.

The following is adapted from the after-action report of May 10-11, 2012 describing the first such incident to which the NAWAC referred as “rock wars”:

19:44 – The team (Bowman, Hayes, Helmer, and Colyer) heard a very loud crashing sound 50 yards west of the cabin on the mountain slope. To the men it sounded as if a large boulder-sized rock had been tossed on the slope of the mountain.

19:45 - Bowman, Colyer, and Hayes headed up the mountain to investigate. In the process, Colyer injured his elbow and his ankle. Colyer also smelled a “horse-like” smell while ascending the slope. The men headed back down to the cabin.

20:48 – Chow. While eating, the men heard a rock strike the ground near Bowman’s ATV.

21:59 – Helmer reported a distant wood knock west of the cabin on top of the north mountain or beyond.

22:20 – Colyer heard the sounds of branches being broken to the south of the cabin.

22:40 – The men reported a “smelly horse stall” smell.

23:10 – The men heard what sounded like a softball-sized rock land approximately 12 feet behind Colyer near Bowman’s Kifaru teepee.

23:14 – Colyer responded to the rock throws by launching two rocks deep into the woods on the slope of the mountain northwest of the cabin; the men could faintly hear Colyer’s rocks make their impact somewhere up on the mountain slope as the rocks hit trees and then fell to the ground each with a thud. It was “pitch-dark.” Colyer could not even find rocks to throw without the use of his headlamp, yet something up on the rocky and steep mountain slope was apparently finding rocks with ease and throwing them with authority toward the men in the black of night without the use of lights.

23:17 – Colyer threw another rock deep into the west woods.

23:19 – Colyer launched another rock. Bowman noticed indeterminate movement up on the mountain using the thermal.

23:20 – Colyer threw another rock as the team noted snapping of limbs behind the cabin.

23:40 – The team heard an unidentified vocal “OOOO” sound from the mountain to the north.

23:45 – Helmer and Hayes reported a “musky odor” wafting in from the east.

23:46 – The team heard another rock being thrown from the mountain over the cabin landing west of the cabin.

23:48 – The team heard another rock coming from the same area landing in the same general area.

23:50 – The team detected another rock from the same place.

23:53 – Both Hayes and Colyer threw rocks back up onto the slope of the mountain.

Friday 11 May 2012

00:00 – Hayes returned fire with three more rocks into the woods on the slope.

00:08 – The team heard a rock hit trees behind the cabin and land on the ground with a loud thud. The rock did not make it over the cabin.

00:12 – Colyer produced “pant-hoot” vocalizations.” There was no immediate response.

00:15 – Colyer produced a “whoop” vocalization.

00:16 – Another rock landed near Bowman’s teepee.

00:41 – Colyer threw another rock.

01:19 – The team heard some kind of faint chatter-sounds coming from the mountain slope northwest of the cabin.

01:21 – Another rock landed behind the cabin after crashing through the trees.

01:27 – Another rock thud was heard by the team near Bowman's ATV.

01:31 – The team heard a metal-banging sound to the south.

02:00 – Weather: clear, very quiet, 55° F.

02:30 – Totally exhausted, the team turned in for the night. No further activity was noted by the team. (Adapted from Operation Persistence Alpha team after-action report from May 10-11, 2012, unpublished.)

It is estimated that most of the rocks were thrown from origin points of no more than 50 yards away; however, there were a few documented cases of rocks that were estimated to have been thrown from possibly twice that distance, estimating based on the sounds of the projectiles as they were hurled through the foliage. In 2013, there were two such documented events that occurred within the span of a week that remain incredible even for the men who documented them. The first event occurred on the morning of July 3, 2013, as McAndrews and Horstman were in the overwatch blind. The following is adapted from the after-action report:

04:43 – McAndrews and Horstman heard what they first believed were independent wood knocks, but then realized they had heard one single object (a rock) thrown from the east to the west along the slope of the mountain. The rock apparently struck wood four times before it succumbed to gravity and fell to the earth, perhaps providing the final knock sound. McAndrews and Horstman were in disbelief when they realized that the object had been thrown over 100 yards (estimated) yards along the slope of the mountain.

04:53 – Another rock was thrown and landed somewhere to the east in the bottleneck area. After that many rocks were launched. It seemed that rocks were flying in every direction from practically every direction; the men found that it was impossible to

document them all. McAndrews and Horstman wondered if the rocks were part of some kind of hunting activity.

04:54 – The men heard wood knocking from the bottleneck.

04:59 – A “good-sized rock” was launched from east of the east shed to the south-southwest of the overwatch tent. McAndrews recorded that the throw was “fast and powerful.” The men could hear the rock buzz through the vegetation on its trajectory to the south before it loudly thumped the rocky ground.

05:00 – Just as they began discussing the previous throw, Horstman and McAndrews heard another throw of incredible velocity and accuracy zip through the trees from the southwest woods. It cleared the base campground and then with great thunderous volume blasted the roof of the base camp cabin. It sounded like a gunshot going off in the night. The men estimated that the rock had been thrown no less than 60-70 yards away to the southwest. McAndrews wrote in the journal: *“I am unnerved for the first time in the overwatch tent. Make no mistake: There is an animal out there that can throw powerfully and accurately in pitch darkness. Wow.”*

Horstman had a much less profound statement but no less a true assessment of his thoughts at the time: *“Everyday my mind gets re-blown.”* (Adapted from Operation Relentless Juliet team after-action report from July 3, 2013, unpublished.)

Later that week, Lawrence, Colyer, and Higgins, who initially had been unsure what to think of the McAndrews and Horstman report, documented a similar rock-throwing event. As with McAndrews and Horstman, Colyer and Lawrence were on watch in the overwatch blind, while Higgins attempted to sleep in his tent located approximately 20 yards west of the overwatch blind and some 20 yards south of the cabin. It was July 6, 2013:

03:28 – Colyer and Lawrence heard a rock rip through vegetation, tree branches, and leaves from high up on the mountain before the rock soared into camp with considerable velocity and struck the ground hard between the overwatch tent and Higgins’s tent.

Ten seconds later, the men heard a rock blast through vegetation and trees from the southwest, perhaps 60-70 yards behind Higgins’s tent, and soar through the air before

it hit the roof of the base camp cabin like a grenade exploding [indicating that the total distance of the throw must have been approximately 90-100 yards]. Higgins later remarked that it was the loudest rock impact that he had ever heard.

Lawrence and Colyer were astonished.

Colyer whispered to Lawrence, “*Awesome...*” (Adapted from Operation Relentless Juliet team after-action report from July 6, 2013, unpublished.)

Over the four-year survey period, NAWAC teams physically collected over 60 rocks from the roofs of the base cabin or other roofed structures on the property. The rocks varied in size and were, on average, golf ball-sized to baseball-sized (see Figures 19-32).

Rock-throwing was not only limited to the cabins or cabin satellite structures. Team members documented significant numbers of rock-throwing incidents as they implemented concealment techniques and attempted contact in the field. What follows is an account of one such incident:

16:30 – While Jerry Hestand and Mark Porter took naps, Daryl Colyer and Travis Lawrence deployed in the Ghost Blinds [located on the south side of a creek bank, on relatively flat but rocky ground].

17:30 – The first of several rocks landed just below where Lawrence and Colyer were deployed. The rock was baseball-sized and landed a few feet from Lawrence. It hit the rocks below him and loudly bounced around. It had come from the east-northeast [the men were on higher ground than any of the terrain to the east-northeast].

Colyer and Lawrence exchanged rock throws over the next one and one-half hours with the unseen rock-chucker, located somewhere to the east-northeast [apparently concealed behind very dense vegetation and forest debris].

19:40 – As the sun began to get significantly lower, Colyer and Lawrence decided to return to base camp. They hoped the rock-thrower would follow them back to camp. They chose the most circuitous route possible, circled around to the east and then north, before heading back to the west to camp.

20:00 – Colyer and Lawrence arrived back at base camp.

20:03 – As Colyer and Lawrence began telling the other team members of the visitor to their position, a loud and sharp wood knock thundered with an echo through the valley from somewhere to the immediate east-southeast, along the route the men had taken to get back to camp.

Colyer, Lawrence, and McAndrews immediately went east to investigate. (Adapted from Operation Persistence Delta team after-action report from May 26, 2012, unpublished.)

Sometimes, the teams found that the “overwatch tent” was possibly targeted while they conducted overwatch activities. In 2014, the overwatch tent was constructed up on an 11-foot wood tower connected to the cabin on the northeast corner. The structure allowed for NAWAC researchers to climb up into the overwatch tent directly from the cabin, remaining concealed the entire time. The following is adapted from a 2014 after-action report describing an incident while Dave Cotter conducted overwatch from the elevated structure:

00:01 – All three men entered into the base camp cabin. Paul Bowman and Alex Diaz retired to bed; Dave Cotter entered into the OW [overwatch] tower and commenced OW.

00:16 – The three men heard a rock very loudly strike the west end of the roof of the base camp cabin. Cotter, on OW, believed the rock had come from the northwest. He desperately scanned all about but he was unable to visually detect any signs of the culprit that could have thrown the rock.

01:10 – With Bowman and Diaz inside the cabin asleep, Cotter heard another rock loudly slam the northwest corner of the base camp cabin. Cotter documented that this rock impact was equally as loud and violent as the one that had struck the cabin at 00:16. Cotter believed this one too had come from the northwest. He was still unable to visually detect the culprit.

01:15 – As Cotter continued to seek out the source of the hurled projectiles, the OW tower north plastic wall was struck by a rock. Cotter believed the rock had been thrown directly at him: Had the wall not been there, he was certain the rock would

have passed no more than 14 or 15 inches above his right shoulder and a foot from his head as he faced north-northwest.

Cotter elaborated:

I was looking through the night vision scope with my eye touched up to the ocular piece. Although I did not see the rock or what threw it I saw the 'ripple' effect on the plastic of the OW tower. It actually looked similar to ripples in water as they spread out in the plastic and down into the upper right corner of my field of view through the thermal.

02:30 – Another object loudly struck the OW tower with force. This time the impact was on the top, at the northeast corner of the canopy tent that served as the roof for the OW tower.

03:00 – Cotter next documented a “strange incident” while he was scanning through the thermal scope up onto the mountain to the north-northeast. Cotter “clearly heard” what sounded like “a rock in the two to three pound range being dropped” perhaps a distance of 18 inches onto another rock. Cotter described the impact sound as “clear but not loud.” To Cotter, the noise sounded as though it had occurred right behind him in the immediate front area of the base camp cabin.

Cotter immediately swung the swivel chair around and began scanning the area. He saw nothing unusual. Cotter believed the sound had been close, perhaps no more than a mere 25 or 30 feet away.

03:45 – Still scanning and on alert, Cotter heard a sharp loud impact on the plywood of the OW tower on the west side over by his left foot. The object—very likely a rock—struck the plywood and then bounced onto the roof of the cabin. Cotter was certain that the OW tower was being purposely targeted.

Cotter wrote:

I spent almost all of my night looking from west, northwest to north, as this is where most of the activity seemed to be centered. Throughout the night I felt that 'something' was going on in this 90 degree arc. Despite scanning this area as well as

360 degrees I could see absolutely no source for the incidents I encountered. As an aside despite the rain & wind I could very clearly see a fox patrol the compound several times as well as a bobcat up on [the mountain]. Lastly, we later pulled a rather large rock off of the back roof of the [cabin]. I wonder if this was the rock that impacted the plywood below my left foot...

06:18 – Cotter was overcome with fatigue and exited down into the new addition of the cabin. [All windows in this section of the cabin were well covered with cloth this time.]

As soon as Cotter passed the second of the large windows, quietly walking west inside the cabin, he heard two “almost simultaneous impacts” on the wall just outside of where he was positioned inside the cabin. Cotter believed that the objects would have hit him in the shoulder area had the wall not been there.

Cotter immediately pulled back the cloth on the window and looked outside all around. He saw “absolutely nothing!”

Cotter wrote: “It is worth noting that the roof overhang at the back of the [cabin] is 18” plus so I cannot see how an impact could happen w/o objects being thrown.”

He continued to share his thoughts on the incident:

How these two projectiles hit right where I was standing under the roof eaves just seconds after I left OW and passed the two closed windows (shades drawn) and I was unable to locate the source of the projectiles is baffling. I can only think that the thrower was in the area of the wood shed and storage shed to the west. Other than that it is a complete and total mystery to me.

06:25 – Bowman and Diaz were now awake. Cotter was perplexed by what he had experienced and he was frustrated by his inability to visually detect his tormentors; he retired to bed. (Adapted from Operation Tenacity India team after-action report from July 17, 2014, unpublished.)

Another incident that involved possible targeting of the overwatch structure, at least initially, occurred as Ken Helmer conducted solo overwatch the early morning of July 22, 2014, while

his teammates slept inside the cabin (as was his custom, Alton Higgins slept in his tent located some 20 yards to the west-southwest of the cabin). What follows is an adaptation from the after-action report:

02:20 – Helmer climbed up into the OW compartment.

02:30 – Helmer very quickly activated his red headlamp to locate the duct tape to attached the shemagh to the thermal. Approximately 30 seconds later he heard two rocks thrown from the north just seconds apart that fell just short of the OW tower; the rocks hit the ground with a sharp sound.

03:25 – From OW, Helmer heard a wood knock from the northwest.

04:45 – Helmer heard a “large, fast rock” thrown immediately over the canopy of the OW tower from the northeast up on the slope, just missing the OW tower and crashing to the ground perhaps 20 feet to the south. Helmer noted that it was a “very distinct rock impact” and that the rock was “very large and very loud.” Without even seeing the rock and going by sound only, Helmer estimated that the rock must have been the size of his splayed hand. Upon later investigation he would find his size estimate to be extremely accurate.

This incident unnerved Helmer as he contemplated what could have happened had the large stone crashed into OW and hit him. For a few seconds he actually considered aborting OW; however, he stayed and continued to scan up the slope from where he was certain the rock had been launched.

05:45 – Helmer heard “another large but smaller” rock soar through limbs and leaves and over the OW tower, again crashing onto ground, perhaps as close as 15 feet away to the southeast. This time it came from the northwest, hitting another rock loudly as it struck the ground.

06:00 – Helmer lay down on the floor of the OW compartment in an attempt to better view the slope and mountain. He quietly worked hard to scan every last bit of the south face of the mountain.

06:10 – Helmer left the OW tower to glass the mountain from ground level.

06:15 – As Helmer exited the cabin a rock loudly struck the cabin roof.

06:22 – Helmer heard a loud impact at the west cabin. He immediately (but slowly and quietly) went east on the main trail to circle back around from the east; he would work his way around, passing the south cabin on his way toward his ultimate destination of the west cabin.

06:30 – Now just east of the south cabin on the main trail, Helmer heard the west cabin blasted with yet another rock.

06:35 – As Helmer stood in front of the south cabin, he heard a loud impact on the south side of the cabin (the opposite side from him). Almost simultaneously with the loud strike on the south cabin, another rock blasted the base camp cabin roof. Awakened even through his ear plugs, and thinking Helmer was still providing OW from the OW tower, Colyer yelled out to Helmer. Helmer heard Colyer but he was unsure what exactly was happening back at the base camp cabin.

06:36 – Helmer heard another very loud impact at the west cabin.

06:37 – A loud and clear wood knock rang out from the creek area to the south about halfway between the west and south cabins. Helmer was being tugged in every direction it seemed, as the rest of his team remained asleep. Helmer worked his way to the west as he passed by the south cabin. He heard thumping footfalls as something fled.

06:41 – Colyer heard another large rock slam the base camp cabin roof.

06:55 – After having stood his ground for a moment, Helmer resumed his movement toward the west cabin.

07:01 – As Helmer passed the open area of the west woods, he heard large movement at the base of the north mountain as well as large rocks displacing. He froze and scanned the mountain slope and surrounding woods. He saw nothing.

07:15 – Helmer returned to the base camp cabin to find everyone still asleep except for Colyer, who still lay in his cot. As Helmer walked through the camp yard, he heard an object strike one of the tree trunks, bouncing off onto the ground, thrown from an unknown direction and location.

07:45 – Still fighting sleep and remaining on guard outside, Helmer saw a rock strike the ground nearby.

08:00 – Helmer finally retired to bed. (Adapted from Operation Tenacity Juliet team after-action report from July 22, 2014, unpublished.)

Sometimes, individual people seemed to be targeted, and a couple were actually struck by rocks. Paul Bowman, Kathy Strain, Travis Lawrence, Jerry Hestand, Mark McClurkan, and Baron Meadows were all buzzed very closely by rocks (within inches or a few feet), or in the case of McClurkan and Meadows, were actually hit by rocks (on the ankle and foot, respectively). During a short two-day visit to the cabin after the 2013 summer survey had concluded, Meadows actually observed a long black hair-covered arm jut out from behind and up in a tree and launch a rock at him. He was hit by one rock on his boot after seven to ten rocks had been thrown at or near him in a span of a half minute. (B. Meadows, personal communication, September 22, 2012).

In June 2013, as part of a team that documented more rock-throws than any other team up to that time, Jerry Hestand believed he was targeted by the unseen rock-throwers:

22:31 – A rock thrown from the mountainside struck the ground just beside the portable shower stall on the east side of the base camp cabin.

22:32 – A rock hit the base camp cabin, thrown from the mountain.

22:55 – Three rocks successively hit the base camp cabin, all launched from the mountainside.

Hayes and Hestand moved toward the mountain, using thermal optics, hoping to acquire a hint of visual contact. They saw nothing of significance. Another rock was defiantly launched from the mountainside and landed just east of them.

23:00 – A pack of *C. latrans* howled loudly from the south.

23:01 – As Hayes walked around the cabin toward the fire circle, a rock popped the base camp cabin roof.

23:07 – The team was perplexed as to how the rock-chuckers could remain unseen and virtually undetectable yet continually and defiantly throw rocks into camp that sometimes nearly hit the team members. The throwers were so accurate that they very often connected with their intended targets (roof tops). Another rock thrown from the mountainside missed the cabin and landed on the ground between K. Strain and Hayes.

23:08 – The east shed took a hit as another rock was thrown from the mountain.

23:25 – Hayes returned fire with a rock of his own; he threw a rock deep onto the mountainside.

23:30 – As Hestand stood by the east shed, a rock loudly blasted the east shed roof, greatly startling him. He believed the rock had been targeted at him but missed him and had hit the shed.

23:33 – Having had his fill of the nearly incessant rock throws from the mountain and the middle woods for the last week and having exercised disciplined restraint and passive observation, on this night Hayes reacted with a bolder technique. He promptly proceeded up the mountain in hopes of acquiring a visual contact, despite knowing full well that all attempts to assertively pursue up the mountain in the past had yielded no definitive results. He also knew that passive observation and restraint had not yielded conclusive evidence either.

23:35 – Hestand moved away from the east shed to a position that he believed might give him more protection: along the back wall of the base camp cabin near the battery array. As soon as Hestand was in his new position, a rock shot out from the woods to the immediate north of the cabin and slammed the back wall of the cabin, missing him by two feet. He now felt certain the thrower had targeted him personally.

23:36 – Seeing the rock nearly hit Hestand, K. Strain and Porter felt compelled to go into the mountainside vegetation after the rock-thrower. Hestand moved yet again. This time he quickly moved around the cabin along the south wall (front of the cabin). (Adapted from Operation Relentless Golf team after-action report from June 13, 2013, unpublished.)

Sometimes, rocks were thrown within minutes of team members arriving at the base camp cabin [located about 25 yards south of a 30-45-degree mountain slope]:

15:30 – Daryl Colyer, Michael Mayes, and Robert Taylor arrived at base camp.

16:07 – As Colyer stood at the back of the cabin looking up into the dense vegetation, a softball-sized rock slammed into the roof of the cabin just at the edge of the roof, to Colyer's left, perhaps 20 feet away from him. Colyer immediately turned to see the large rock bounce once on the roof and tumble down onto the ground behind the cabin. The rock, having been thrown with great force, definitely startled Colyer. Ken Helmer and Trey Dublin, who had gone just east and north of the cabin, also heard the rock slam the cabin. (Adapted from Operation Persistence Kilo team after-action report from July 15, 2012, unpublished.)

From August 30, 2013:

23:25 – Alton Higgins and Daryl Colyer arrived at the private property gate. The gate was locked and the men had to hike to the base camp cabin to retrieve a key to unlock the gate.

23:35 – The two men arrived at the base camp cabin. During the days leading up to Sierra team's arrival in Area X, Colyer had wondered about the condition of the overwatch tent. He recalled that Paul Bowman's teepee from the previous year had been partially torn down and several of the stakes had been snapped in half during the week leading up to Labor Day weekend. Just as now, there had been a multi-day break between teams.

When Colyer and Higgins arrived at base camp, with their head lamps illuminating the area, Colyer first looked toward the overwatch tent in anticipation of possible damage to it. He was not surprised to see that the tent was totally collapsed, broken,

and destroyed. He called Higgins's attention to the tent. Higgins responded with a simple, "Whoa...."

The two men began inspecting the damaged tent and found that it was not only collapsed, but the metal legs and frame had been outright broken.

23:45 – While the two men were talking and examining the tent, a very loud metallic bang from behind the base camp cabin sounded out like a lightning strike. Colyer yelled out, "Rock!!" Colyer and Higgins quickly moved to the area between the base camp cabin and east shed and began scanning the area for eye reflection or movement of any type. (Adapted from Operation Relentless Sierra team after-action report from August 30, 2013, unpublished.)

There have been documented accounts from team members of other objects being thrown in lieu of rocks, which suggests, as with chimpanzees, that wood apes possess the cognitive ability to choose between the objects they use as projectiles, with each type of projectile chosen for a different desired effect. Or, perhaps, it simply comes down to a matter of available material. Team members have documented nuts, tree branches, sticks, and pine cones being used as projectiles in Area X.

In June of 2011, Jerry Hestand found himself the target of a stick launched at him as he sat high in a climbing tree stand at the base of the mountain:

00:06 – Higgins noted in his journal that the owls were extremely active. Then, the team heard a sound from behind the south cabin. It might have been something falling, like a hickory nut hitting wood or some other solid surface. The team also noted that they had heard sounds resembling something walking near the south cabin.

00:15 – Buntenbah changed the disk in the mini-disk recorder that he had earlier deployed. At this time, Burrows also put out a sound recorder.

00:42 – The team heard another loud sound of something hitting metal from the direction of the north cabin. Higgins recorded in his journal that "It was a pretty loud noise."

Conditions: Still dead calm, 75° F.

00:44 – The team heard a knock from the mountain to the north.

00:47 – The team heard sounds of movement around the south cabin.

Conditions: Condensation forming.

01:41 – The team heard “a loud bang as something hit a metal roof.” Buntambah said he thought he could hear an object moving through leaves before the loud bang. Higgins recorded that “It sounded like a rock hitting metal.” Around this time, there were other various noises; Higgins was unable to note everything.

02:00 – Hestand returned to the cabin from his deployment up in the climbing tree stand [he had been in a tree on the valley floor about 50 yards from the mountain slope]. Hestand reported to the team that he had noted a number of what sounded like rocks striking the north cabin, the east cabin, and the shed between the north and east cabins. He had also heard and peripherally seen a stick or broken limb come whizzing by, end over end, near his head (his headlamp was on at the time). (Adapted from Operation Endurance Charlie team after-action report from June 22, 2011, unpublished.)

Vocalizations

The NAWAC has been conservative and careful not to mistakenly attribute vocalizations of known wildlife to the wood ape. After all, vocalizations heard in wilderness areas can be extremely beguiling and even known wildlife can produce a variety of vocalizations that can sometimes make determining a source of origin difficult for even a seasoned outdoorsman or naturalist. With that said, over a four-year period NAWAC researchers heard a variety of vocalizations that were thought to have originated from the target species. Most of those sounds were not recorded; however, the NAWAC was fortunate enough to record a few on digital audio recording systems.

The first vocalization to be described and provided is the “huff,” that NAWAC observers have heard time and again immediately preceding rock throws. Of all the vocalizations documented, team members are most certain in attributing it to the wood ape. Most of the huffs were heard through the cabin’s open windows while observers were in the cabin in their

bunks. The sounds were made immediately prior to the sounds of rocks loudly slamming the cabin roof, walls, or porch.

Daryl Colyer found it particularly unsettling as he lay in his cot below open windows when he heard ape-like huffs of exertion before a rock was launched and slammed the cabin:

02:55 – Colyer, bunking in the kitchen on a cot below two open windows with no screens, awoke to clearly hear trotting footfalls and a very ape-like “*huu huu*” just before the cabin roof was slammed with a rock that impacted very loudly, bounced around loudly, and tumbled off onto the ground. The entire team had heard it. Colyer lay there and mentally noted it all. He felt annoyance and anger.

03:00 – 05:00 – For the next two hours, the men were repeatedly awakened as the cabin was struck over and over again by large and loud rocks on the roof. They could do nothing but lie in their beds and try to go back to sleep. At one point, around 04:00, Colyer detected a very strong and sour odor that was “overwhelming.” (Adapted from Operation Persistence, Kilo team after-action report from July 16, 2012, unpublished).

As Travis Lawrence attempted the element of surprise by parking his truck a mile away and then hiking into the camp, he heard a distinctly ape-like vocalization before hearing a large animal loudly tear through the dense foliage:

11:15 – Lawrence entered the gate of the compound on foot and proceeded onward toward the east. He got within visual range of the west RV, still walking very quietly and methodically, when he heard, from just to the immediate south of the west RV a loud, gorilla-like huffing sound: “*HUUAAA...HAAAAA...*” Then he heard a large animal quickly bolt off to the south. He never saw it, but the animal apparently had seen Lawrence on the trail just as he approached the west RV. (Adapted from Operation Relentless Hotel team after-action report from June 16, 2013, unpublished.)

On the last night of Juliet team, Alton Higgins and Daryl Colyer documented a series of prolonged vocalizations that were evocative of the known great apes:

19:55 – Colyer and Higgins returned to camp.

21:45 – While sitting out in their camp chairs, the men heard for a period of about two minutes, several series of “huffs” from up on the slope behind the east shed; the sounds were very much reminiscent of gorilla huffs. The huffs would continue for about 10-20 seconds and then they would cease. Then after about 10 seconds or so, they would begin again. Colyer wondered if the sounds were designed to intimidate the men. Finally the sounds ceased and the men did not hear them again.

23:00 – The men turned in for the night. (Adapted from Operation Tenacity Juliet team after-action report July 25, 2014, unpublished.)

Another vocalization documented by the NAWAC that was very kindred to vocalizations of the known great apes was a clear, loud, and intimidating “pant-hoot” in August 2011. Brian Brown, Brad McAndrews, and Daryl Colyer had driven out of the area in Colyer’s truck to purchase Fix-a-Flat for their ATV’s flat tire. The men were camped remotely on a mountain and had transported themselves and their equipment to their remote campsite by ATV. Colyer’s truck was parked 3.5 miles away from camp and to repair the ATV tire the men had to first hike to Colyer’s truck, drive to the nearest store some 15 miles away, make their purchase and then drive back before hiking back to camp. It was an all-day affair.

As the day turned into late afternoon, the three men came upon downed logs in the main trail back to camp and were forced to use handsaws to physically cut a drivable path through saplings around the first very large downed log. What follows is the description of the incident adapted from the field report:

17:35 – The team was forced to stop in order to widen the trail because of a large downed oak tree. Colyer, Brown, and McAndrews observed two other downed logs within twenty to thirty yards of the first downed tree.

17:50 – There was a dark thunderstorm moving into the area and there were loud sounds of thunder all around the men as they quickly worked to clear logs and trees. After fifteen minutes of clearing the timber, Colyer started the engine to his truck as Brown and McAndrews assisted in guiding Colyer through the clearing around the first downed oak tree, which was too heavy and large to be moved. Almost immediately upon the start of the vehicle, Brown and McAndrews clearly heard a very strange, loud vocalization. The two men heard the vocalization for approximately five

seconds before, at the insistence of Brown, Colyer turned off the engine and emerged from his truck. At that time Colyer too heard the bizarre vocalization. The strange vocalization continued for another five seconds during which time it was joined by some nearby yelping *C. latrans*.

Brown, Colyer, and McAndrews were sure that the vocalizations had been from a large animal making a deep and continuous in-and-out wheezing sound along with a hooting sound. Later research showed that the vocalizations were eerily reminiscent of “pant-hoot” vocalizations of the common chimpanzee (*P. troglodytes*), albeit deeper, and with more of a long “eee” vowel sound as opposed to “ooo” or “eww.”

The men set out on foot to investigate the sounds. They moved quietly back along the trail. About fifty yards down the trail, the men heard more *C. latrans* vocalizations, but they were quite subdued. After a few minutes of investigation, the three men returned to Colyer’s vehicle and proceeded toward their remote camp on the mountain, having sufficiently cleared the area for vehicular navigation. (Adapted from Operation Endurance Juliet team after-action report August 17, 2011, unpublished.)

There were reports of multi-tonal vocalizations that seemed melodic:

18:45 – The teams met back at the cabin. Pinkerton and Lawrence reported hearing a strange multi-tonal vocalization that was made up of several separate notes forming a chord—much like a harmonica or train whistle—while sitting quietly in their blind. Lawrence remarked that it sounded almost like a choir singing for a couple of moments. (Adapted from Operation Endurance after-action report from June 8, 2011, unpublished.)

The NAWAC documented a number of moaning, mournful howls during the four-year period that they ascribed to wood apes:

23:05 – Higgins now joined Colyer outside.

23:07 – As Colyer and Higgins sat in their camp chairs they heard a “raspy roaring multi-tonal” vocalization to the south. Higgins remarked that it sounded “mournful.” The vocalization was reminiscent of the so-called “Ohio Howl,” (purportedly a

recorded wood ape vocalization). Perhaps ten seconds after the first vocalization, another vocalization very similar to the first sounded out from somewhere south of the west cabin. It seemed to have been in response to the first one. Neither vocalization had been extremely loud, but they were nonetheless clear. Colyer and Higgins found the vocalizations to be “creepy.”

23:08 – The two men heard more rock displacement, this time to the south.

23:10 – The men heard two successive wood knocks from the area of the south cabin. (Adapted from Operation Tenacity Juliet team after-action report July 24, 2014, unpublished.)

As Alton Higgins awaited the arrival of Travis Lawrence, he documented more howls that he attributed to wood apes:

19:12 – Higgins heard yet another “LOUD bang” from the south cabin area. Higgins thought it sounded as though something—either the object used to strike or the object that was struck— had broken during the act.

19:15 – Using his iPhone, Higgins played a recording of a human baby laughing. He heard no immediate response or reaction.

19:45 – When the water pump self-activated once again, Higgins, having grown tired of contending with it, simply disconnected it for the night.

20:05 – Higgins heard a limb snap from behind the cabin; he believed the limb had been one inch thick or so.

20:07 – Higgins heard more limb breaking from the mountain slope to the east-northeast of the cabin. He made sure to note that there was no wind whatsoever; the night was “completely calm,” and the temperature was a pleasant 77° F.

20:08 – Higgins heard yet another knock from the west cabin area. Higgins believed there were possibly two apes in the vicinity.

20:24 – Higgins’s attention suddenly turned to “three LONG howls (each six seconds?)” that sounded “very close” and that were “mournful” and deep in tone. The howls had come from the west and Higgins further described them as “Ohio Howlish.”

20:30 – Higgins entered into the cabin. The night was calm and clear; the temperature was 76° F. 20:45 – Finally succumbing to the incredible fatigue, Higgins turned in for sleep.

21:00 – Just as he began to fall asleep, Higgins was awakened by a “VERY LOUD VOC” that was at once a “snarl,” a “growl,” and a “howl.” More than anything though, it had been “scary.”

Whatever produced the vocalization had been very close to the cabin and it had Higgins hoping Travis Lawrence would soon arrive. He wondered whether or not he should take up an OW position. He ultimately decided that he needed sleep so he remained in his cot.

22:00 – Higgins got his wish: Travis Lawrence arrived at the cabin. Higgins informed Lawrence of the vocalization that he had heard just one hour before Lawrence’s arrival and Lawrence could tell that Higgins had found the vocalization to be unsettling. (Adapted from Operation Tenacity Lima team after-action report August 5, 2014, unpublished.)

Over the four-year period team members documented a number of vocalizations attributed to wood apes that involved a sort of “faux speech” or “chatter.” Some of the best examples of these “faux speech” encounters are provided below.

While Paul Bowman and Ken Helmer posted in a mirror blind, they heard “chatter-like sounds”:

19:46 – Bowman and Helmer returned to camp. The men reported hearing “stomps north and south, chatter-like sounds, cough/sneezing sounds (none of the men coughed or sneezed), and movement,” much of it to their south in the thickest of nearby vegetation. In that direction, for both Bowman and Helmer, the visibility was

perhaps 20 yards at best. (Adapted from Operation Persistence Alpha team after-action report from May 9, 2012, unpublished.)

Later that week, the two men and the rest of their team documented more of the sounds:

01:19 – The team heard some kind of faint chatter-sounds coming from the mountain slope northwest of the cabin. (Adapted from Operation Persistence Alpha team after-action report from May 11, 2012, unpublished.)

The following week, the next team also heard a similar vocalization:

00:05 – All team members heard strange chattering from the northwest. K. Strain described it as a woman talking followed by more rock clatter. (Adapted from Operation Persistence Bravo team after-action report from May 17, 2012, unpublished.)

After a few hours of sleep, later in the morning while still in bed, Kathy Strain heard faux speech through her open window:

06:10 – K. Strain heard “chatter” outside her window up on the slope of the north mountain. She described it as sounding like the word “*Yoga!*” She then heard “stomping around” noises and movement up the slope of the mountain. (Adapted from Operation Persistence Bravo team after-action report from May 17, 2012, unpublished.)

While concealed in a low-lying position to the east, Travis Lawrence reported “gibberish” coming from above him on the steep and rocky mountain slope:

13:45 – Lawrence heard a rock shift and roll down the mountain. Immediately after he heard the dislodging of the rock, Lawrence heard some undecipherable “gibberish” to his northwest up on the slope. Lawrence turned in the direction of the sound and heard what he described as “*Bok! bok!*” The sounds were in a deep scratchy voice and were similar to part of the recording Delta team had recorded during the previous summer’s operation. As J. Davidson came within range of communications, Lawrence asked him to step into the woods near the base of the mountain and make noise. Lawrence hoped Davidson could draw out or flush an ape. J. Davidson entered the

woods on the north side of the creek and threw rocks, creating a distraction for Lawrence to change positions so that he could see the base of the mountain. (Adapted from Operation Persistence Foxtrot team after-action report from June 14, 2012, unpublished.)

With just Travis Lawrence and Robert Taylor at the cabin, and both sleeping, Taylor heard faux speech:

03:07 – Taylor heard the cabin get violently slammed on the west side. Undisturbed, Lawrence remained asleep.

03:20 – Taylor heard a rock hit the roof on the east side of the cabin. Lawrence remained asleep.

03:30 – Taylor heard more movement outside his window, so he decided to get up and wake Lawrence. When Taylor rose from his bed, he heard a sharp pop against the west wall that was not as loud as the first smack. Taylor, then in a disturbed state, woke Lawrence. The men talked for about 15 minutes and then Lawrence went back to sleep while Taylor sat by Lawrence in the chair in the middle of the cabin and found it hard to fall back to sleep. Sometime later in the night, Taylor heard a “chattering sound like two voices” and then heard the sound of what he thought was something scratching on the screen window east of Lawrence or possibly in the east bedroom. (Adapted from Operation Persistence Juliet team after-action report from July 12, 2012, unpublished.)

Attempting an experimental overwatch involving a makeshift trash bag structure in the bed of Helmer’s truck (this was the organization’s first experiment with polyethylene trash bags and thermal optics), Lawrence and Helmer were exposed to “chatter”:

01:35 – Helmer and Lawrence heard a wood knock to the east.

01:45 – The men heard a rock slam the east cabin.

03:05 – The men heard what they described as “chatter.” Helmer thought he heard voices twice for periods of approximately 5 seconds. He thought the sounds emanated

from the vicinity of the east cabin. (Adapted from Operation Persistence Kilo team after-action report from July 17, 2012, unpublished.)

Brad McAndrews and Jeff Eltringham heard and documented more faux speech early during the next year's spring-summer survey:

06:17 – McAndrews heard what he described in his field notes as “chatter” from somewhere west of the shed—perhaps only ten yards away from it—moving south. After about ten seconds or so, McAndrews woke Eltringham. During this time, McAndrews continued to hear the sounds of metal even as the “chatter” sounds seemed to move off toward the main trail through the compound. Eltringham heard the “chatter” and tried to discern familiar sounds and speech patterns but he could not. (Adapted from Operation Relentless Bravo team after-action report from May 6, 2013, unpublished.)

There were a few incidents involving a sort of *whispered* chatter:

00:55 – Overcome with fatigue, team members decided to retire to their respective sleeping quarters. As Brown headed toward his tent, he heard three heavy and clear footfalls retreating to the south behind his truck. After clearing his hands of things he was carrying, he drew his Sig Sauer P226 and advanced toward the heavy footfall sounds. As Brown advanced, whatever it was moved off further into the woods, making movement sounds as it went. Then Brown heard what he described as “a low whispered gibberish” for about three seconds. Brown was perplexed; it was like nothing he had heard before. Brown promptly notified the other team members and the team began to investigate the area. As the team investigated the area, they heard the sounds of two rocks being intercepted by tree branches and more than likely falling short of their intended target, the cabin itself. (Adapted from Operation Relentless Foxtrot team after-action report from June 6, 2013, unpublished.)

Later that morning, Monica Rawlins heard something similar:

03:45 – While Rawlins removed her cot and sleeping bag from the tent, more rocks struck the south cabin. Rawlins heard a distant peculiar deep vocalization, almost like an abbreviated pant-hoot, but shorter and more subdued, in a breathy or almost

whispered tone: *"who, ha ha!"* from the northwest slope. (Adapted from Operation Relentless Foxtrot team after-action report from June 6, 2013, unpublished.)

Brad McAndrews reported the following:

03:43 – McAndrews heard what “sounded like a human voice loudly whisper-talk.” McAndrews was in utter disbelief as the sound most closely resembled the English language phrase *“hayy-ah.”* (Adapted from Operation Relentless Juliet team after-action report from June 30, 2013, unpublished.)

Shortly after his arrival at camp to join Hotel team, while sitting in his vehicle, Mark McClurkan observed the following:

02:03 – Mark McClurkan arrived at camp and parked southwest of the overwatch tent.

02:23 – As McClurkan was resting in his vehicle with the windows down, he heard movement approximately 40 feet to the south, which was accompanied by a moderately high-pitched chatter that sounded like *“eeeeeee bwah gee bah doh.”* This chatter was immediately followed by something being tossed through the brush from the east. After several seconds, a very heavy animal moved from the location of the toss to the north. A nearly full moon allowed for a glimpse of it breaking through the moonlight on the trees at around six feet above the ground. It seemed to stop behind the outhouse and visual contact was lost. (Adapted from Operation Relentless Hotel team after-action report from June 22, 2013, unpublished.)

While bathing in the creek, Alton Higgins documented another example of faux speech:

14:40 – The men arrived at the crossing and Colyer parked his truck. At Lawrence’s suggestion, Colyer left his firearms in the truck. Colyer told Lawrence that he did not feel comfortable doing so, to which Lawrence replied, *“Nobody’s ever had encounters while bathing in the creek.”* After Colyer gave Lawrence a look of insecurity, Lawrence grabbed his pump shotgun and his sidearm. The men then proceeded to walk down the creek to the area where they were to bathe. As the men began to prepare to enter the cold creek waters, they were alarmed when they heard running

footfalls and then thrashing about in the dense vegetation across the creek from them. Colyer looked at Lawrence and retorted, "You were saying, Travis?"

14:50 – The men proceeded to bathe. While they were bathing they heard what sounded like a rock thrown from the woods out onto the creek bank.

14:55 – As the men were exiting the creek, they heard a pronounced huff or "*Hwaa!!*" from across the creek.

14:58 – As the men dried off and dressed, Colyer noticed that Higgins was staring down the creek intently. Colyer asked Higgins if something had spooked him. Higgins replied that he had heard "what sounded like people talking. It was some kind of weird chatter." Higgins tried to mimic what he had heard and produced a weird-sounding, garbled, indecipherable chatter. The three men dried off, got dressed, and then got back in the truck. (Adapted from Operation Relentless Juliet team after-action report from July 5, 2013, unpublished.)

While Ken Helmer provided overwatch from the tower, and Rick Hayes and Ed Harrison slept inside the cabin in preparation for overwatch later, Daryl Colyer remained outside and attempted to elicit contact:

23:15 – Colyer stood near the mouth of the trail to the southwest from the cabin. He began acting like an agitated chimp, complete with gestures, posture, and body language, raising his arms above his head like a chimp and beating his chest like a gorilla, all the while producing a very loud and lengthy rendition of agitated chimp pant-hoots and screams. He continued for perhaps one minute and his very loud vocalizations reverberated throughout the valley.

Within 30 seconds after he had finished, a large rock loudly slammed into the ground after coming down from the mountainside through the air, hitting leaves as it descended. It fell short of the cabin and slammed into the ground bouncing a few times. Colyer, Harrison, now awake in his cot, and Helmer in the overwatch tower, all heard the rock. Colyer yelled out toward the mountainside, challenging the rock-thrower.

23:17 – From the west, somewhere near the west cabin, Colyer, a trained linguist in the Air Force, heard a series of peculiar vocalizations that he had never heard before. The vocalizations were low in tone, gravelly or raspy, seemed almost multi-syllabic, and were growling, grunting, and chattering in nature; there were four in all. Colyer immediately responded by mimicking the vocalizations back toward the unknown originator of the sounds. Colyer stood there in the dark looking west and listening intently. (Adapted from Operation Tenacity Alpha team after-action report from May 22, 2014, unpublished.)

Since Colyer's encounter, it has come to light that orangutans have the ability to produce "faux speech" that is very similar to the faux speech heard by Colyer and others during the Ouachita Project (<https://www.youtube.com/watch?v=h6kiA3KCf5k>).

In June of 2014, Mark McClurkan's team documented more "faux speech":

21:49 – While the team was sitting around the fire circle, McClurkan and Horn heard some kind of very strange "chatter" from behind the cabin along with what sounded like "pacing back and forth." McClurkan had everyone sit quietly as the chatter and movement continued. Immediately afterward, a rock flew into camp from the mountain.

The team used one of the ATN ThoR optics to glass the mountain slope everywhere they could look; they could see no signs of an animal at all, despite being able to hear the chatter and the movement clearly. (Adapted from Operation Tenacity Charlie team after-action report from June 3, 2014, unpublished.)

Travis Lawrence documented more such chatter while on overwatch two times during the month of June in 2014:

05:15 – [While on overwatch] Lawrence and Schmidt heard what they described as "two seconds of chatter," or faux speech, immediately west of the cabin. (Adapted from Operation Tenacity Delta team after-action report from June 12, 2014, unpublished.)

05:01 – [While on overwatch] Lawrence heard a "chatter-like sound" from the middle woods, that sounded like four syllables of an unintelligible language spoken in

a very deep tone. (Adapted from Operation Tenacity Foxtrot team after-action report from June 23, 2014, unpublished.)

Footprints

As mentioned in the Background section, Alton Higgins gambled that the area had potential after he and his small team found a set of footprints in a muddy area to the west of the cabin site in 2000. During the four-year study period, 2011-2014, NAWAC observers found an abundance of tracks that they ascribed to the target species, despite the valley floor being mostly rocky. The following are adaptations from the after-action reports describing the most notable track finds over the four-year period:

After Colyer had fired at a wood ape in an attempt to collect a specimen, the next morning he and his team resumed the search for evidence:

07:30 – The team awoke and quickly began the search. They never thought to look east along the creek. If they had, they would have found blood on the rocks.

The team more closely examined the tracks at the site of where Colyer shot at the wood ape the day before. One track had what appeared to be toe impressions and the tracks were sixteen inches in length. The heel-to-heel measurements were sixty-four, fifty-nine, and fifty-two inches. (Adapted from Operation Endurance after-action report Echo team from July 4, 2011, unpublished.)

An exceptional tracker, Mark McClurkan was one of the best on the NAWAC for identifying wildlife sign that was often not obvious:

09:28 – Seasoned tracker Mark McClurkan set out to photographically document the tree limb breaks that he and Brad McAndrews had earlier observed.

09:31 – McClurkan photographed the breaks and began following a game trail. About fifty feet from the last break he observed another break that showed distinct signs of small animal chewing. About five feet past this break, McClurkan observed a clearly defined bipedal track way and a clean five-toed impression in the grass and leaf litter. He measured the track at eighteen inches in length and six inches or more at the ball of the foot. He noted the stride as “about sixty inches.”

McClurkan wrote: *“The straddle varied with the terrain. These tracks were very fresh as the crimp and bruised grass was still dark and wet where it had been damaged.”*

The entire track way consisted of thirty or so tracks and depressions over one-hundred-fifty to two-hundred feet of trail. Eventually McClurkan lost the trail in the rocks of the creek bed. His examination of the creek revealed *O. virginianus* tracks (two doe and one fawn), a single *C. latrans*, and two raccoons (*Procyon lotor*).

(Adapted from Operation Endurance Foxtrot team after-action report from July 11, 2011, unpublished.)

As McClurkan pressed the search the next day, he discovered more:

12:25 – ...near the cistern below the south cabin, [McClurkan] found a clear, deep, and well-defined track with five clear toe impressions (Figure 33). The track was approximately sixteen inches long. McClurkan was able to find five more tracks in about twenty feet, but most of them were damaged, unclear, or simply degraded. It appeared to McClurkan that the animal had left the creek bed at this point.

McClurkan also believed that the metal cistern was a potential source for some of the metallic bangs heard by team members.

13:00 – McClurkan photographed the track and the surrounding area, retrieved his gear, and broke camp. (Adapted from Operation Endurance Foxtrot team after-action report from July 12, 2011, unpublished.)

Later that summer in the same area, Brown, Colyer, McAndrews, and Buntenbah discovered a smaller track:

16:45 – Hiking from the east in the creek bed for purposes of rallying with McAndrews and Buntenbah at the gate, Colyer and Brown located a seven-inch barefoot human-like track in the creek directly by the cistern where Mark McClurkan had found another larger track (Figure 34). The track exhibited an apparent hallux and suggestion of additional phalanges, or toes. The track was impressed into remnant soils that had originated from a foxhole that was dug into the creek bank. The track was estimated to be no more than five days old, and it contained a collection of leaves and two small clumps of dirt. The track was impressed deeply

within the soil— approximately four inches at the forefoot—just under a downed tree branch. By all appearances, the maker of the track had attempted to step under the branch before stepping into or over a conglomeration of vines and briars.

Additionally, four more seven-inch impressions were located on the other side of the obstacle. The broad shape of the calcaneus (heel) and toe alignment in relation to the long axis of the foot, including a large hallux and lack of apparent claw impressions were not representative of tracks made by *U. americanus*.

16:55 – Colyer and Brown found four similarly sized impressions in a sandy creek bank approximately thirty yards west of the cistern.

17:30 – Buntentah retrieved two camera traps from the cabin compound. Brown and McAndrews made a Hydrocal cast of the seven-inch track by the cistern. The men covered the cast with leaf litter and left it to cure overnight. Before leaving, the men left two Reconyx Hyperfire cameras in concealed positions to keep a watchful eye on the cistern location. (Adapted from Operation Endurance Juliet team after-action report from August 14, 2011, unpublished.)

The next year, McClurkan found more tracks:

09:45 – McClurkan went to check on the Bushnell camera that he had deployed the previous day. It had not been triggered, but a trackway was found near the source of the sounds that occurred south of the cabin on the previous night. There were several tracks proceeding east up the road from the “Y” at the westernmost cabin. (Adapted from Operation Persistence Bravo team after-action report, May 16, 2012, unpublished.)

Two days later, there were more:

12:10 – McClurkan found a likely track—appeared to be a left foot—on the trail behind the east cabin. Following its direction, more tracks were found in the leaf litter east of the draw coming down the mountain to the east of the east cabin. The animal appeared to have shuffled a bit, perhaps unsure of its next move. The team placed a Plotwatcher camera on a tree on the east cabin fence facing the area.

14:50 – Brown and McClurkan discovered a trackway consisting of impressions approximately 16 inches long and 6 inches wide. The stride varied as it seemed to duck under the roof of the shed. At one point, the stride was as much as 7 feet. (Adapted from Operation Persistence Bravo team after-action report, May 18, 2012, unpublished.)

The area around “the cistern” consistently produced tracks. This may not have been because it was a popular area, but rather because the cistern was surrounded by black soil rather than rocks making it one of the few places in the entire area where tracks registered:

16:20 – Colyer investigated the area around the cistern. He found two separate trackways of two different animals. They both appeared as bare feet and were approximately a foot in length. While investigating that area, Colyer heard what he described as “soft clicks.” He again concealed himself. (Adapted from Operation Persistence Kilo team after-action report from July 19, 2012, unpublished.)

Colyer and Mayes happened into a track as they attempted to locate a “lost” camera trap:

15:30 – Colyer and Mayes ate lunch in an attempt to energize before retrieving cameras from along the creek.

16:15 – The pair attempted to retrieve the lone Reconyx Hyperfire located in the creek behind the south cabin near the cistern, but they could not locate the key. In frustration, the men left the camera in place.

16:30 – Next the men drove down the road in an attempt to locate the Reconyx camera reportedly still deployed near the hair snare well west of the compound. The pair was unable to locate the camera or hair snare but did come across a large track on the trail near the west end of the north mountain. The track was approximately 14” x 6” x 4” (length, width at ball, width at heel) and was in an area of soft dirt where the creek, now dry, normally crossed the trail.

17:00 – After getting extensive video of the track (Figure 35), Colyer and Mayes returned to camp. (Adapted from Operation Persistence Kilo team after-action report from July 20, 2012, unpublished.)

Colyer and Lawrence found a track behind a tree, as if an animal had stood there while perhaps observing the cabin area below:

17:20 – Colyer rendezvoused with Lawrence behind the east cabin.

17:35 – Colyer and Lawrence discovered a fresh ape track in the leaves perhaps 50 yards north of the east cabin. The track was approximately 14 inches in length. It was surrounded by various scuff marks in the leaf litter and soil. The track was just behind a large tree. It occurred to Colyer and Lawrence that from behind that tree they could have been easily watched any time they had hiked behind the east cabin. (Adapted from Operation Relentless after-action report from May 25, 2013, unpublished.)

The next year, Ed Harrison found a track in the same vicinity:

16:20 – Harrison found a possible juvenile footprint in the mud on the trail just north of the east cabin. Harrison photographed the track and took measurements. It was not a large track but it did appear to have been produced by a bare foot, possibly that of a small wood ape. (Colyer, Helmer, and McAndrews later went to inspect the track with Harrison and Helmer, and they thought it might be a legitimate track). (Adapted from Operation Tenacity Alpha team after-action report from May 23, 2014, unpublished.)

McClurkan's sharp eye again located more sign:

15:15 – The rain had confined the three men to the porch. McClurkan and Bass were facing south; Horn was facing west. The men “heard a crash” through the trees in the west woods. Horn, facing west, observed “a tree about 50 yards to the west” shaking and a “beagle-sized black mass” as it jumped down from the tree. McClurkan and Bass heard the commotion but did not see it. Horn told McClurkan and Bass what he had seen; the three men took off to investigate.

At the tree, McClurkan found “a prominent wood ape track” that he estimated to be “2-3 days old.” He then found a knuckle imprint in the mud that looked like it had been produced by a very small ape. McClurkan estimated that the track was at least a week old.

Horn photographed the prints and took a video of McClurkan discussing the tracks. McClurkan then found fresh cat tracks. McClurkan believed that whatever Horn had seen jump from the tree was most likely a melanistic bobcat (*Lynx rufus*) or perhaps even a large, black, feral, domestic cat (*Felis silvestris catus*). (Adapted from Operation Tenacity Charlie team after-action report from May 31, 2014, unpublished.)

Paul Bowman and Alex Diaz found a track that Bowman later described as the best track he had ever seen:

19:30 – While en route back to the cabin, Bowman found a barefoot print on the southern branch of the creek. It appeared to be a left print of a bare foot, approximately a size eight or nine in human male sizes, and it was pointing directionally away from the base camp cabin. Diaz photographed the track from a variety of angles using a ruler for scale. The track was clearly different from the boot prints left by the men. It was the clearest Bowman had seen in his years of coming and going in and out of the valley. Bowman was certain the track was of a small ape. (Adapted from Operation Tenacity India team after-action report from July 16, 2014, unpublished.)

Colyer found two tracks on a steep creek bank just behind the south cabin:

13:12 – As Colyer approached the south cabin, he heard the movement of a presumably large animal as it moved quickly into the dense vegetation on the southern side of the creek behind the south cabin and green shed. Whatever it was had escaped in time to evade Colyer's visual detection.

13:30 – After looking around and investigating around the south cabin, and finding what Colyer was certain were two ape tracks on the steep bank behind the green shed, Burrows and Colyer returned to base camp. (Adapted from Operation Tenacity Juliet team after-action report from July 19, 2014, unpublished.)

Hiking down to the cabins from about four miles away, Colyer and Higgins discovered an abundance of wildlife tracks to include what appeared to be wood ape tracks:

15:15 – Higgins and Colyer reached the so-called “mud hole” where Higgins had originally found wood ape tracks back in 2000. There, the men found all manner of

wildlife tracks, including raccoon, deer, hog, and black bear. They also found three tracks they attributed to the target species (about 14 inches in length). (Adapted from Operation Tenacity Juliet team after-action report from July 22, 2014, unpublished.)

Rick Hayes and Phil Burrows found an interesting set of tracks to the east of the cabins:

17:19 – Still hiking west back to the cabin site, Rick Hayes and Phil Burrows found what appeared to be three adult ape tracks (a left, right and left) about eleven inches in length and a single juvenile track about six inches in length, in water and mud. The men could make out the big toe on two of the adult tracks; the second left track was “especially good and clear.” (Adapted from Operation Tenacity November team after-action report from August 21, 2014, unpublished.)

Other Evidence

Nut Cracking Stations

In 2013, two separate nut cracking stations were found in Area X. The two stations were examined and recorded by Kathy Strain on June 12, 2013. “Dodger One” was discovered by Brian Brown, 1.3 miles east of base camp, along a feeder creek to the main tributary (Figures 36, 37, & 38). When first located, crushed black walnut shells were found on the top surface. The “station” is made of limestone and measures 49 inches long by 29 inches wide by 16 inches high. A “hammer-stone,” squarish in shape, was lying on the top surface. Fragments of black walnut shells were located under the hammer-stone. The stone did not show any marring from use, nor did the limestone outcrop. The following is adapted from the after-action report:

16:45 – The men discovered, from all appearances, a large boulder with a collection of crushed hickory nuts on top, and a smaller rectangle-shaped rock—4” x 3” x 6”—on top of the nuts and the boulder; the smaller rock certainly appeared to have been used to crush the nuts. (Adapted from Operation Relentless Bravo team after-action report from May 10, 2013, unpublished.)

The “Jeremiah One” nut crushing station was discovered 2 weeks later by Travis Lawrence, 660 feet east of base camp. It is located on the contour of a relatively steep hillside, covered with green briar and other smaller rocks. When first examined by Lawrence, 12 hickory husks were found on the surface. The “station” consists of limestone and measures 21 inches

long by 20 inches wide by 20 inches high. A “hammer-stone,” oblong in shape, was lying on the top surface. Both the hammer-stone and the boulder showed strike impacts, clearly indicating it had been used multiple times (Figures 39 & 40).

17:57 – Lawrence radioed Colyer to tell him that he discovered a large flat rock with crushed nutshells on it along with a smaller rock apparently used to break the nutshells, similar to what Brian Brown, Jeff Eltringham, and Mark Gregory had found on Bravo team. (Adapted from Operation Relentless Echo team after-action report from May 25, 2013, unpublished.)

While other animals can use tools (i.e., chimps, otters, etc.), a hammer-stone is a heavy object that needs to be gripped as it is brought down onto the hard nut shells in order to open them. Multiple strikes may have been necessary to achieve the goal. In North America, the only described candidate capable of doing this is *Homo sapiens*. Since it is highly unlikely that a human would use a rock to crush open nuts instead of collecting them, returning to camp, and opening them using standard metal tools, it is reasonable to hypothesize that the stations are associated with wood apes. Moreover, NAWAC field teams have reported hearing multiple rock-tapping sounds, or “rock clacking,” in quick succession from time to time, a sound similar to that made by chimpanzees crushing nuts (<https://www.youtube.com/watch?v=2N34Fcn3J00>). A number of other similar stations were reported by NAWAC field teams, all within one mile of the base camp cabin.

Blood and Hair

On July 3, 2011, Daryl Colyer observed a smoothly walking brown-colored upright hair-covered figure approximately 6.5 feet tall or taller. In an attempt to collect a type specimen, Colyer took a number of shots at the animal, apparently wounding it. The creature fled to the south and apparently into the dry creek, leaving blood spatters on rocks in the creek. With very limited time, Colyer and his team were unsuccessful in their attempts to find the animal or its blood; however, on July 12, Mark McClurkan found a number of blood-spattered rocks in the creek approximately 50 yards east of the original sighting location. McClurkan collected some, but not all, of the rocks (Figures 41, 42, 43, & 44). Two days later, an attempt to collect more of the rocks was made but a hard rain washed away any remaining blood spatters.

The team knew that the length of time the blood had remained exposed in the environment (temperatures were well into the 90s during the day) would likely present a problem for any

future DNA extraction efforts. Dr. Ken Helmer, M.D., and Brad McAndrews, a research medical biologist with a BS degree in biology (emphasis in genetics and biotechnology), led the NAWAC's efforts to confirm the presence of blood on the rocks before reaching out to a third-party lab. Blood was positively identified using two methods: 1) Dr. Ken Helmer confirmed what appeared to be limited amount of cellular debris using a wet-prep slide, and 2) got a strong positive reaction when using a product called *BlueStar* (signal stemming from a suspected blood spot itself). *BlueStar* is a forensic "DNA safe" luminol-based identifier of latent blood stains. Both of these tests were positive; however, these tests were carried out on two rocks that were *not* sent out to a third-party testing lab.

Two other rocks with ostensible blood spatters were sent to a third party lab. The lab provided a preliminary announcement to McAndrews and the NAWAC after initial tests:

We have been repeating our assays to confirm what we have found. I am attaching a preliminary report so far.

- 1) We performed a test for putative blood and it came up negative. I attach the photo of the swab with a control positive swab.*
- 2) We then eluted all the material from the rock with a buffer we have used for Forensic samples on a variety of objects including stones.*
- 3) We extracted DNA and used generic primers for mammalian mitochondria and found no amplification. This test is sensitive to around 10 pg or the equivalent of DNA from 2 cells.*

We are going use some more sensitive analyses to make sure we have not missed anything.

The lab, located outside the United States, was unsuccessful in subsequent attempts as well. McAndrews was puzzled over the lab's results, but he was confident that the amount of time that the rocks were out in the environment played a major role. McAndrews wrote the following response to the lab:

I am concerned that your team was unable to extract any measurable amount of nucleic acid from this blood source. I can assure you that the sample sent to your laboratory was, indeed, blood. Our organization was careful to take the appropriate steps to confirm the presence of blood before reaching out to a third party.

May I ask what identifying reagent was used to identify the presence of blood? Did you test work to identify hemoglobin-derived iron residues?

Does your laboratory use a spectrophotometer and/or fluorospectrometer to measure OD and microconcentration prior to qPCR?

I too am perplexed that you have been unable to amplify any mammalian DNA. It is true that I was able to produce positive results by running the Applied Biosystems Quantifiler Duo real-time PCR followed by three fragment analysis assays... Applied Biosystems: AmpFiSTR Identifiler Plus (6pg sensitivity), AmpFiSTR Minifiler, AmpFiSTR Next Generation Multiplex). We actually extracted 250 picograms of DNA at a volume of 50uL using one sterile swab. The swab for this testing was taken from the two rocks on which blood was confirmed. The microsatellite fingerprint contained TWO contributors, one of which was a minor contributor. We suspect that one of these profiles stems from Dr. Ken Helmer who handled the rock prior to testing. Additional testing is being performed by a colleague of mine to identify/remove the contaminating source.

One consideration that I have seen useful when testing low concentration sources is to slightly increase the number of amplification cycles. On the AB Identifiler kit, for instance, we have seen success in downstream applications by increasing our amplification cycles from 28 to 29 cycles (sometimes even more).

As soon as I am able to return to my office in Houston I will forward along some additional field photos of the collection site. Those photos should reveal, quite clearly, that the origin of this "stain" does indeed come from an animal source (it's quite evident that these blood samples came from a wounded animal). (B. McAndrews, email communication, September 20, 2011.)

The lab forwarded the actual results to McAndrews, who, in turn, forwarded them to the NAWAC's Board of Directors:

The results are as follows:

*Presumptive Blood Test = **Negative***

*Detection of Nucleic Acid (DNA) = **Negative***

*Real-time Quantitative PCR = **Negative***

The laboratory utilized a standard phenolphthalein reagent which has a sensitivity of 1:10,000 and has a specificity two times higher than that of a luminol-based reagent. Luminol, which we used to positively confirm blood (BlueStar), has a sensitivity of 1:1,000,000 (or 100x higher than that of phenolphthalein) however it has a specificity half that of phenolphthalein. The phenolphthalein method is commonly used in forensic labs because it offers a lesser chance of producing a false-positive result.

As far as our interests are concerned, the presence of blood DOES NOT need to be confirmed. The laboratory performed the presumptive blood test because that test was the first step in their laboratory's Standard Operating Procedure (SOP) for samples under interrogation. All labs have individual SOPs and these protocols are not necessarily the same from laboratory to laboratory. Laboratory SOPs are unique to each testing facility and they are individually written and internally validated. Most molecular laboratories who test forensic samples DO apply the presumptive blood test procedure as it functions to build tangible evidence against criminals. For the purpose of defining a new species, the only evidence with value and significance comes from the molecular sequence of the DNA itself. Technically, we could pull DNA out of wood ape's booger and still prove the existence of a new species.

Regardless of the whether or not they confirmed blood, I was (and am) confused as to why they could not verify its presence. This is a very simple test. How could they have NOT corroborated what we found? One explanation might be that we used a reagent that was 100x more sensitive than what the laboratory used. Despite this fact, I still would have expected the lab to verify iron residues from lysed red blood cells on rocks. I asked the lab if the stone's porous surface and/or mineral content could have had an inhibitory effect on the blood test (possibly by binding the iron molecules and effectively removing them from access to the sterile swab used during laboratory collection). Their response was that they couldn't rule that out as a possibility. (B. McAndrews, email communication, November 8, 2011.)

After much discussion about what to do with the final two remaining rocks, McAndrews and the NAWAC decided to hold onto them, storing them in cool, dry conditions conducive to preservation. It was hoped that retaining the final two blood-spattered rocks for the possibility of more testing at some point in the future would allow time for next-generation

sequencing techniques to become available to the scientific community and allow more options and places for study.

On the morning of July 18, 2012, five and one-half hours after Ken Helmer had been awakened by something reaching in through the window and pushing then pulling him, Travis Lawrence and Helmer found hairs on the window screen. The screen had been bent:

10:00 – While investigating the incident at the screen window involving Helmer, the men found several long white, or very light colored, hairs. The bottom corner of the screen had been pulled and bent back; there was a large opening in the screen now. (Adapted from Operation Persistence Kilo team after-action report from July 18, 2012, unpublished.)

Mark McClurkan conducted preliminary testing on the hairs and found one to be particularly intriguing (Figures 45, 46, & 47). McClurkan's preliminary findings were as follows (the intriguing hair specimen referred to as "Sample 6"):

Sample 6 is intriguing to us for several reasons. The number of animals in that region with reddish-brown hair that grows to that length and with that texture is limited to only a few: black bear (*Ursus americanus*) (which, despite the name, come in a variety of colors), bison (*Bison bison*), and elk (*Cervus elaphus*). The scale pattern is clearly not that of an elk. Black bear and bison hairs would exhibit a medulla. We have never, in more than a decade researching the area, seen any signs of bison, but there is ample black bear population. The only other possible contributors would be fox (*Urocyon cinereoargenteus*), dog (*Canis lupus familiaris*), or coyote (*Canis latrans*), which are also ruled out by the lack of a medulla and the scale pattern. There is one NAWAC member with long, red hair and the sample does not match hers. Another interesting factor regarding Sample 6 is that we only found one strand. This suggests the animal in question was not molting (as with raccoon hair which was found in abundance). We believe this hair was either pulled out due to contact with the surface on which it was found or fell out naturally.

The condition of Sample 6 is also interesting to us in that the end is a frayed break rather than tapered or blunt. Our assumption is that a hair demonstrating that amount of fraying would have received a lot of physical wear due to contact with the

environment (limbs, branches, etc.). A human hair would more likely be blunt or split on the end. Finally, we saw no sign of chemical treatment of the hair.

It is possible that Sample 6 is from a human, though as we detailed above, it does not fit the profile of human hair. It could also be from an exotic species, such as an orangutan (*Pongo*), though that possibility seems highly unlikely due to the incompatible climate of the area. (McClurkan & Brown, 2012).

Alton Higgins later added his thoughts regarding the curious location of the “sample 6” hair, the characteristics of the “sample 6” hair, and circumstances surrounding the collection of the “sample 6” hair:

It’s also significant that the combination of the height of the window [the bottom windowsill is approximately five feet off the ground] along with the presence of a large attached table in front of [and below] the window covered with all kinds of junk, and the distance of Ken from the window, would have required an extremely tall person (or creature) to reach Ken (Figure 48). The idiosyncratic hair...was found right where the corner of the window screen was punched out. Odd coincidence. (A. Higgins, personal communication, December 31, 2014). (Figure 43.)

After McClurkan’s analysis, the hair was submitted to a third party lab in the United Kingdom. The NAWAC did not receive official notification from the lab regarding results of the test, or whether any test had ever even been conducted until after the Ouachita Project Monograph was released. A few days after the paper’s release, communication with the lab regarding “sample 6” was facilitated by an unnamed third party:

The second sample from Mr. McClurkan (#25072) was a single hair found on the window sill of a cabin... This sample was identified as human from the mitochondrial 12S RNA sequence. As this test alone does not distinguish between Homo sapiens and other homins, for example Neanderthals, I ran a second sequence on this sample from the mitochondrial control region. This test would distinguish between H. sapiens and other homins and, for H. sapiens, indicate an ancestral origin. The control region sequence from #25071 identified this being identical over the 104bp segment tested as identical to the standard Cambridge reference sequence, which is typically European. Thus my conclusion is that #25071 is from a modern H. sapiens of likely European origin.

Although one must always question a human result and wonder whether it is caused by contamination, in this case our protocols were designed specifically to remove surface contamination and had successfully done so in our control samples and in the other 29 samples reported in the same paper. I think it is fair to conclude that #25072 was indeed from a modern Homo sapiens (Third-party lab, email communication, March 6, 2015).

Odors

From the first team in early June 2011, NAWAC team members documented odors that they ascribed to wood apes. The odors were often described as reminiscent of a “sweaty horse” or were described as musky and similar to the odors one encounters at primate exhibits at a zoo, while other times team members found the odors to be more malodorous and difficult to endure. Below are a number of descriptions of odors thought to have been linked to wood apes. The after-action report adaptations below are only a percentage of the total descriptions of odors encountered during the project thought to have originated with the target species.

Mayes and Colyer were the first two on-site in 2011. That first week the men documented some fascinating observations, not least of which were repeated strong odors that the men believed were likely from the target species. The odors were very reminiscent to Colyer of his visual encounter with an upright orangutan-like animal in 2004 during which he smelled the animal after it fled from him and his wife. He carried this knowledge with him when he and Mayes went on-site and began the Ouachita Project:

21:30 – It was pitch dark outside. Mayes, who was sitting on the porch of the cabin alone while Colyer was inside the cabin attempting to kill a mouse, heard a large animal moving in the woods just south of and very close to the cabin. Shortly after hearing the animal, Mayes smelled a powerful odor. Mayes sharply snapped his fingers to gain the attention of Colyer, who was just inside the cabin door. Colyer quickly emerged from the cabin without saying a word and immediately detected the overpowering odor. The odor smelled skunky and musky, and also smelled of urine.

Mayes notified Pinkerton and Lawrence by radio that there was an unseen, likely large, animal near the cabin that had a very strong and atypical odor. Mayes advised Pinkerton and Lawrence to advance only with white lights on and to make plenty of noise while hiking from cabin to cabin. As the two approached Colyer’s and Mayes’s

cabin, Mayes and Colyer noted that a large animal broke loudly and thrashed away through the vegetation; Pinkerton and Lawrence had apparently startled and flushed the animal.

22:00 – Pinkerton and Lawrence joined Mayes and Colyer on the porch of the cabin and also detected the odor. Neither had ever smelled an animal like it before. The smell seemed to be coming from just south of the team's location either in or just across the dry creek bed. The smell varied in intensity but was present for the better part of two hours.

23:45 – The four men heard an extremely loud impact sound at the easternmost cabin, where Pinkerton and Lawrence were staying. To the team, it sounded like a huge rock had struck one of the metal areas of the cabin. The sound was enormously loud and well beyond what a nut or sweet gum ball could have produced. At this time the odor that had been continually present totally and abruptly disappeared.

24:00 – The team determined that the smell was that of an animal, not the result of animal spray, since the smell abruptly disappeared; animal spray would linger for hours, possibly even days. The men also were confident that the visitor had not been a black bear as its behavior was distinctly unbearlike. (Adapted from Operation Endurance after-action report from June 8, 2011, unpublished.)

Mark McClurkan and Travis Lawrence documented a fetid smell the next week:

12:45 – The doe that the team had heard earlier continued to blow. The team noted that it sounded “more and more panicked, obviously trying to confuse the predator(s) and protect her fawn.” McClurkan and Lawrence set out off the porch in an effort to confront the predator; they proceeded along the westward path. Lawrence noted “a low growl...from the thick area to the west.” While the growl was not loud, Lawrence felt an immediate adrenalin rush not unlike what he had experienced when something had impacted the north cabin while he was in the outhouse on the morning of 11 June. Lawrence described the growl as deep, guttural, and threatening. The pair stopped movement and listened for more growls. After they had stood there a short while and had heard no other sounds, the investigators continued to move towards the north cabin. As they approached the cabin, they detected a very strong and offensive odor. In their notes, they described it as “malodorous, a dead animal

smell...a primal nasty animal smell.” After approximately one minute, the odor abruptly disappeared. McClurkan and Lawrence then decided to head back to the cabin and listen. The entire time, the two could hear the doe continuing to blow from a position that they estimated was about one-hundred yards to the northeast. Since the wind was blowing from the north, the two inferred that the doe had been blowing at a predator. The two returned to their cabin and approximately ten minutes later, the doe stopped blowing. (Adapted from Operation Endurance Bravo team after-action report from June 13, 2011, unpublished.)

When Travis Lawrence returned to the study site two weeks later, he was greeted by a now familiar odor:

22:15 – Travis Lawrence and Ken Helmer arrived at the front gate of the property. Lawrence, who led the way in, stepped out of his vehicle to open the gate and was immediately greeted by a familiar, strong, musky odor. It was the same musky odor that he and others had smelled in previous weeks. Armed and alert, Lawrence opened the gate and with haste, he and Helmer made their way to the cabins. When the two men arrived at the south cabin, they again smelled a strong musky smell. They unloaded their gear for about a half hour, all the while smelling the strong odor. For several hours, the two men sat on the porch as the strong smell came and went. Lawrence noted that at times, the musky odor that he and Helmer smelled on this night was stronger than any smell he had previously encountered during weeks one and two. (Adapted from Operation Endurance Echo team after-action report from June 29, 2011, unpublished.)

More of the same odors were documented the following year:

23:21 – The men detected “a strong smell” drifting into camp while they were sitting around discussing recent events. The men described the smell as “very musky” and “identical” to odors detected by teams during the 2011 Operation Endurance. (Adapted from Operation Persistence Bravo team after-action report from May 12, 2012, unpublished.)

While leaving the area, Jason Hill had a flat tire and had to hike back to the cabin. Along the way, he encountered the same kind of odor already documented numerous times by his teammates:

13:55 – As Hill was ascending up the trail out of the valley, his truck had a flat about one and one-half miles west of the compound. He attempted to lower the spare tire but he was unable to do so. His only choice was to return to base camp on foot to see if Higgins and Lawrence could provide assistance. Hill took his rifle and his sidearm.

Very shortly after he began the hike back to base camp, Hill heard clear footfalls to his south and smelled a very strong “sweaty horse” odor. He positioned his rifle in the low-ready position. At times, Hill heard what he described as “loud and clear squishing sounds.” Hill could “definitely” hear “bipedal” footfalls “loud and clear.” He was perplexed by the “squishing” sounds and was unable to determine if the sounds were the sounds of feet splashing in water or if the sounds were produced orally. He noted that there was no source of water near him at the time that he could discern, so he believed the sounds were indeed produced orally.

Similar sounds had been reported by Travis Lawrence and Mark McClurkan during Operation Endurance of 2011. Lawrence and McClurkan believed those sounds had been produced orally. Hill thought the same about the squishing sounds he heard.

Hill was never able to make visual contact with the escort, but he was certain the animal was perhaps only 30-40 feet from him just beyond visual detection. During his hike, he was certain that it crossed the trail behind several times because he heard it on both sides at different times. He also considered the possibility that he had had more than one escort. Hill reported being very “unnerved” during the event. He returned back to base camp in less than one-half hour. (Adapted from Operation Persistence Echo team after-action report from June 4, 2012, unpublished.)

The “sweaty horse” smell was encountered by many of the teams:

21:45 – After it had stopped raining, the men conducted a reconnaissance of the cabin compound, glassing the area with white lights. Taylor and Lawrence departed to the east, while Hestand and Porter hiked west. Near the bottleneck to the east, Lawrence and Taylor both clearly smelled the familiar “sweaty horse” odor. The men continued to push east, finding nothing else of interest. As Lawrence and Taylor passed the south cabin, Lawrence set up the TASCAM audio recorder on the nearby dead freezer. Hestand and Porter pushed west to the gate and then came back to the

north cabin, reporting that they had not experienced anything out of the ordinary. (Adapted from Operation Persistence Juliet team after-action report from July 8, 2012, unpublished.)

At times the smell permeated the cabin as team members attempted to sleep:

03:00 – 05:00 – For the next two hours, the men were repeatedly awakened as the cabin was struck over and over again by large and loud rocks on the roof. They could do nothing but lie in their beds and try to go back to sleep. At one point, around 04:00, Colyer detected a very strong and sour odor that was “overwhelming.” (Adapted from Operation Persistence Kilo team after-action report from July 16, 2012, unpublished.)

Sometimes the familiar odors were the first things documented by the researchers upon arrival:

20:15 – Ken Helmer arrived, honking his horn as entered into the compound. At the gate, Helmer detected what he believed was a wood ape odor (musky, zoo-like smell). (Adapted from Operation Relentless Alpha team after-action report from May 3, 2013, unpublished.)

At times, the odors seem almost like defense mechanisms:

00:10 – As the three men continued up the mountain, they continually heard heavy animal movement above them on the mountainside, as if one or two large animals were fleeing from them

00:15 – As Hayes and Hestand proceeded farther up the mountain, both men were targeted with rocks almost simultaneously from two different directions. Dauntless, the men continued. Hestand reach a point below the crest of the mountain and momentarily halted to listen.

00:20 – Reaching the crest of the mountain, Lawrence and Hayes observed light discipline for one-half hour. The men just stood in the dark listening. During this time Lawrence first detected a particularly noxious odor that he later described as being like the smell of an “outhouse.” After the smell went away, Lawrence smelled it

again; Hayes smelled it too. The entire time the men had advanced up the mountain, there were large animals moving and thrashing about just out of visual range; now, while the men stood still in the dark, they heard movement to every side except the south. (Adapted from Operation Relentless Golf team after-action report from June 14, 2013, unpublished.)

Whenever the teams documented the certain odors, their sense of awareness became heightened:

21:48 – Another rock landed on the ground with a thud to the west of the base camp cabin.

21:55 – An object struck the roof of the cabin. Colyer threw two rocks onto the slope. Almost immediately another object was seemingly thrown from the slope into base camp.

21:57 – Helmer and Colyer detected a very strong “sour sweaty horse” or “zoo” smell. The smell lingered in camp for the next ten minutes.

22:07 – In anticipation of Overwatch, McAndrews went inside the cabin to sleep for a while.

22:22 – Conditions: The temperature was 70° F.; the humidity was 68 percent; quiet and still.

22:23 – Colyer went into the west bedroom of the base camp cabin to retrieve a jacket and found that a strong horse-like odor had filled the room. He assumed a wood ape was nearby in the west woods.

22:27 – The men heard significant movement sounds from the west woods and the middle woods.

22:40 – The team heard several low-volume growls. Colyer detected the horse-like musky smell again.

22:49 – A rock was launched from the mountainside and landed by the east shed.

Moreover, there were sounds of movement on the slope and also movement sounds in the middle woods.

22:56 – The musky odor continued to waft in and out of base camp.

23:09 – Colyer stated, “I smell an ape. Very strong...”

23:22 – The men heard a rock clip tree limbs in the west woods before the rock hit the ground with a thud. It had been thrown from the south somewhere.

23:40 – Helmer, Horstman, and Colyer patrolled the compound. They observed nothing out of the ordinary.

23:55 – While Helmer used the outhouse, Horstman heard three “huff” sounds from nearby in the middle woods. (Adapted from Operation Relentless Juliet team after-action report from June 29, 2013, unpublished.)

In 2014, Brian Brown and Daryl Colyer documented more encounters with an odor that was at once reminiscent of a sweaty horse and the great ape displays at zoos:

21:45 – B. Strain, Brown, and Colyer arrived at an area approximately 4 miles west of the cabin site where Higgins had left his vehicle. Immediately upon exiting Brown’s truck, the men smelled a strong “rich” horse-like odor. Based on past experience, Colyer believed the odor was produced by a wood ape and told Brown as much. There was a significant wind from the east, so the men knew the animal was somewhere east of them. Colyer believed it was probably well to their east and had followed Brown and B. Strain out of the valley when they left to rendezvous with Colyer. Colyer further speculated that it was probably a sentry that was watching to see if the men would return.

21:50 – After gearing up, Colyer and Brown sat on the ground and leaned against Higgins’s parked vehicle on the shadowy side.

Very shortly after B. Strain drove off in Brown’s truck, the “horse-like” odor disappeared too. Brown and Colyer believed the animal was likely keying on the truck and so followed B. Strain back down toward the cabin area. The men reasoned that

the ape must have remained at distance from the area—with the strong wind from the east, the men were able to detect the animal apparently at a good distance—and it did not know that B. Strain had dropped off the two men. (Adapted from Operation Tenacity after-action report from September 9, 2014, unpublished.)

After Brown and Colyer set out on their nighttime hike to the cabin under a super moon and with the aid night vision when in the shadows, they again encountered the odor, except this time it was much stronger:

23:40 – Brown and Colyer continued down the main trail toward the cabin area. The two men saw a large downed log on the south side (to their right) of the trail and took the opportunity for a brief respite from the hike and a chance to quietly sit, listen, and observe. The men sat on the log, facing roughly northwest. Colyer immediately smelled an overwhelmingly strong odor that he attributed to wood apes. Colyer whispered to Brown about the smell and told him there was an ape very nearby, but Brown had already detected the odor too. It was the strongest ape odor that Colyer had smelled since 2012. Colyer and Brown would later agree that the odor was so strong that it had seemed an ape was right there with them.

Brown immediately began scanning with his third-generation NOD. Colyer quickly sought cover on the ground in the rutted trail behind the berm that bordered the north side of the trail. Brown continued to sit on the log and scan. Just then, the men heard an object whizz through vegetation and land to their north on the ground just beyond the trail. Brown looked hard to the north, now with just his natural vision. In between the trees, Brown saw a dark upright figure pass between trees two times before he lost sight of it; it was moving east. The men did not hear it move and when Brown lost sight of the dark figure the odor was abruptly gone as well.

The men remained in position for a few minutes before they got and up and whispered to each other quietly about what had just happened. They believed they may have encountered B. Strain's escort. It seemed likely to the men that what they had just encountered was perhaps not sure about who or what they were, since the men were positioned in the shadows, were dark in coloration, used no lights, and acted very "unhuman." Colyer wondered, in a hushed whisper to Brown, how many humans hiked that trail at "zero-dark thirty" observing strict noise and light discipline. Brown agreed that his and Colyer's was audacious and uncharacteristic

behavior for humans no doubt. This may well have worked to the men's advantage. (Adapted from Operation Tenacity after-action report from September 9, 2014, unpublished).

Reflective Eyes

NAWAC team members documented a number of incidents in which they observed large reflective eyes that by all indications were the eyes of the target species. In one such case, referred to as "the Bright Eyes Incident" by the NAWAC, team members Ken Helmer and Daryl Colyer detected a pair of large reflective eyes looking at them from inside the nearby wood line. The animal was apparently squatted down watching the men as they sat near the fire pit in camp chairs. Initially, the men had no lights on and the only illumination was provided by the camp fire. The following is adapted from the after-action report of May 2, 2012:

22:15 – As they sat in camp chairs, away from the glowing fire they had built, Colyer and Helmer saw a pair of green reflective eyes in the woods to the west, just in front of [Paul] Bowman's ATV but further back in the woods [Figure 49]. The men had been seeing several of the resident gray foxes' eyes off and on for 20 or 30 minutes reflecting the firelight. At first the men thought they were seeing another fox. This set of eyes appeared to be about three feet or so off the ground. Colyer noted that the eyes were "greatly reflecting the firelight and were quite vivid...green." [Rick] Hayes and Bowman were not positioned to see the large reflective eyes. At the same time, Helmer and Colyer turned on their headlamps. At that precise moment the animal began to smoothly rise up to a height of over seven feet and then it moved briskly toward the mountain [Figure 50]. Helmer ran to his truck to retrieve his spotlight. In the meantime, Colyer went after the animal with just his headlamp on. He saw the eyes turn to look toward him again just at the base of the mountain. At that time, Helmer gave his spotlight to Colyer. As the animal reached the mountain slope, Colyer shined the spot light toward it. The animal, seemingly in a panic, tore loudly through the trees and thick vegetation on the mountain slope. Just at that moment, the men heard a rock soar through the branches to the northeast of the cabin and crash loudly onto another rock. The men then focused their attention to the east. Then, the animal to the west with the bright eyes made another run through the bush; the men shifted their attention back to the west and Helmer saw the reflection of the eyes again.

22:22 – As the men began returning to their camp chairs a rock smashed into the shed east of the cabin. Colyer noted that the impact of the rock on the shed sounded like a “damn cannon” (Adapted from Operation Persistence Alpha team after-action report May 2, 2012, unpublished.)

Another incident involving reflective eyes occurred the following week on the night of May 15, 2012. The following is adapted from the after-action report:

20:20 – [Bob] Strain, [Brian] Brown, and [Ken] Stewart went to look at the logs and retrieve a camera from the east end of the clearing. Brown lit up a dark patch of brush on the north mountain while Stewart moved to recreate the sighting from the previous evening. Brown immediately saw “orange eye shine looking toward camp” about 30 yards up the mountain to the northwest. He called out immediately. Brown could see the eyes look toward him and then back to camp several times.

By the time B. Strain got to Brown’s location the shine dropped down as if an animal had lowered its face to the ground. Stewart observed that though the shine was gone, he had not heard movement, so all lights and weapons remained trained on the spot. McClurkan also observed the eye shine in the same spot, but from his vantage point the reflective shine was green (it is common for observers in different positions to see different colors of eye shine in animals; it is largely dependent on the angle of illumination) (Adapted from Operation Persistence Bravo team after-action report from May 15, 2012, unpublished.)

Just before midnight, on July 6, 2012, Travis Lawrence, John Dollens, and Danny Dollens also encountered large reflective eyes. The following is adapted from their after-action report:

23:55 – While [John] Dollens was pointing the flashlight to the northwest, Lawrence spotted extremely large yellowish white eye shine about 15-20 yards away on the slope of the mountain to the northeast. When Lawrence first spotted the eye shine, there was no light being shown directly at it. There was only a small amount of ambient light reaching them from the periphery of the beam on the light J. Dollens was holding. Lawrence could clearly see both eyes, the reflections of which were oval-shaped and about the size of tennis balls. Lawrence witnessed the eyes quickly sweep from looking southwest, to looking southeast, then vanishing. Lawrence quickly got the attention of J. Dollens and directed him to shine the light where Lawrence had

seen the eye shine. Shortly after J. Dollens centered the light on the area, Lawrence and J. Dollens caught another glimmer of eye shine and...J. Dollens, from his position, could see the outline of the head and shoulders of an ape... J. Dollens said that the animal was “huge, with little or no neck” and was “black or dark brown.” Because the eye shine was not round and was so vibrant and bright, Lawrence nicknamed the ape “Ironman.” (Adapted from Operation Persistence India team after-action report from July 6, 2012, unpublished.)

The next year, on June 4-5, 2013, more reflective eyes were documented by Kathy Strain and Shannon Graham. The following is adapted from their after-action report:

23:42 – Rawlins heard movement near Brown’s truck (parked near Brown’s tent, located by where Higgins’s tent had been located).

Graham saw “a fleeting yellow/orange flash” near Brown’s truck “half a head above” the truck cab roof.

Simultaneously, the team heard more rock impact sounds to the east.

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00:10 – K. Strain saw two large eyes—two circles of orange—peering through Brown’s driver and passenger side windows on the far side of the truck, apparently focused on the Foxtrot team members. The team heard movement from the other side of Brown’s truck; they immediately proceeded toward Brown’s truck to investigate. Whatever had been there had already moved away. (Adapted from Operation Relentless Foxtrot team after-action report from June 4-5, 2013, unpublished.)

There were other incidents involving reflective eyes over the four-year study period; however, the cases provided here are the best examples of the documented incidents that by all indications were encounters with the target species.

Close Approaches to the Cabin

One of the more bizarre close approaches to the cabin occurred in the second week of Operation Endurance in June 2011 and involved McClurkan and Lawrence. With Bill

Coffman having left two days earlier, it was McClurkan's and Lawrence's last night there before being relieved by Higgins and Phil Burrows. Without doubt the week had been eventful; however, it all seemed to come to a strange climax on this last night. The following is adapted from the after-action report of June 18, 2011:

02:15 – The “dead animal smell” returned.

02:30 – The team heard what they described as “easily the loudest sound heard thus far”; it was a disturbingly *loud* banging noise at the north cabin. The sound rattled the men.

03:05 – The gray fox squeezed through a hole in the fence. It stood there staring at the men from a distance of about five yards before wandering out of the fenced area.

03:07 – The two men noted the sound of rocks shifting in the creek to the southeast “like something heavy stepped on them.”

03:23 – The two men heard a growl to the south at a distance of perhaps thirty yards. In their field log the men noted that the growl was “higher pitched and not nearly as intimidating as the other growls.” Lawrence threw a rock at the animal. It growled again. Lawrence growled at the animal. There was no response from the unseen animal.

03:51 – The two men heard rocks shifting in the creek to east-southeast, followed by an extremely fetid smell.

03:57 – The men heard another growl from the east-northeast. It was their impression with certainty that the growls were intended for them.

04:00 – The growl was followed by a snort.

04:05 – The snort was followed by what Lawrence and McClurkan described as “the worst smell yet...a nasty urine wet dog nastiness mixture.”

04:10 – The investigators heard crashes in the wooded area to the east. They then heard what sounded like a large dead limb being ripped off a tree. Once again Lawrence hurled two rocks toward the sounds. There was no discernible effect.

04:30 – The two were extremely fatigued and decided to retire for the night.

04:40 – From the loft, the two men heard what they described as “large bipedal animal movement from the south and northeast.” The putrid and pungent “urine smell” returned.

04:45 – The two men then heard a large animal move up the creek from the south, compress the barbed wire fence, and “jog” away.

04:55 – The two men were now hearing what they described as “large bipedal animal movement on all sides of the cabin.” The sounds lasted for several minutes and were accompanied by the overpowering smell of rancid urine. At this point, the two men noted that the first signs of morning light began to appear, although it was still significantly dark.

05:10 – Lawrence next recorded in the field journal what he described as “the single most bizarre event of my life.” Lawrence heard what he described as an odd “squishing sound” to the north on the ground outside his window. He was certain the sound came from the mouth of some animal that was gurgling a copious amount of liquid or saliva; and it was *loud*. Then the two men heard another animal to the south of the cabin below McClurkan’s window make an identical sound; the first animal continued even as the second one to the south joined in, or answered. Then the men heard a third animal join in to the northwest. The men were hearing the same sounds simultaneously from three different sources and directions. Each individual animal produced the sound once every two or three seconds. The odd cacophony lasted over a minute before ceasing. The two men could hear the two animals to the north and northwest moving through the vegetation as they produced the odd sound and walked off together. Once the two to the north were gone, the animal to the south stopped producing the weird sound as well. The two men wrote that they were “stupefied.”

05:15 – After discussing what had just happened, the two men were once again subject to growls from the animal that had remained close and to their south, at times just below McClurkan’s window. After the men heard the first deep, guttural growl, McClurkan tried to imitate the “squishing sound.” The animal responded to McClurkan’s squishing sounds by growling in a very threatening manner. At that time, Lawrence yelled downed through the window at the animal. The unseen animal growled threateningly again. Lawrence growled back at the animal and began howling like a beagle. Curiously, the animal remained silent. Suddenly, the urine odor that had permeated the air for at least the last half hour disappeared.

The animals had never been in a position where the men could visually identify them. Besides using the cover of darkness, they always seemed to remain in a position where line-of-sight was significantly obscured by the incredibly dense vegetation. Lawrence remarked in his log that “They were perfectly elusive.”

By now, visibility was getting better. McClurkan was able to see a hickory tree to the north of about one inch in diameter had been broken at about three feet from the base.

As the men were looking at the sapling break, they heard another bizarre vocalization. The repeated vocalization was multi-tonal. Lawrence described it as sounding “like a pipe organ.”

The vocalization—described as “*ahhhhhh-ohhhhhh*” by McClurkan and Lawrence—started with a low note and descended to a lower note, sort of like a foghorn.

The two men then discussed how no one would believe what they had just witnessed.

06:00 – Once the excitement wore off, the men were overcome with fatigue and they drifted off to sleep. (Adapted from Operation Endurance Bravo after-action report from June 18, 2011, unpublished.)

The following year, after a night of several interesting incidents, another close approach was described in the documenting team’s field journal:

02:20 – Using a Night Optics MiNi-14 third-generation night vision monocular, Brian Brown observed about 100-120 feet down the trail a “dark mass 7 feet above the ground at the extreme end of the clearing” on the north side of the trail just inside the tree line. Mark McClurkan and Ken Stewart immediately illuminated it with white light and also observed the figure. McClurkan noted clear eye shine.

Shortly after the men turned off the lights, Brown detected a “very slow swaying motion.” The men heard much noise to their left on the slope while they were observing the figure, but they ignored the noise. After looking away from the figure, when Brown looked again, the figure had gone. At that time, he saw what he thought was a taller mass to the left of the original figure and he saw a vague head and shoulder outline. After hearing more motion on the slope, the group looked down the trail a third time. The figures were now completely gone.

02:35 – The men began using a handheld GSCI TIM-14TTX thermal optic. McClurkan and Stewart saw a “white spot” that they perceived to be “a head” looking out at them from the slope. By the time Brown got the thermal it was gone. McClurkan saw the spot appear and disappear a few more times.

Earlier in the day, Brown found a spot on the slope of the mountain where the leaf litter had been cleared in the shape of a prone figure looking over the edge of the shelf. The thermal hit was in the same spot.

02:43 Brown remotely turned on his truck lights. Immediately, the men heard a large animal no more than 15 feet in front of his truck—about 30 feet away from the men—loudly move into the woods to the east.

02:49 – For a while, there was so much movement and commotion on the slope of the mountain that the team did not even bother to record the incidents in their journal.

03:40 – Brown moved away from the fire to relieve himself. He detected “something big” moving immediately within the tree line to the west. Stewart and McClurkan rapidly joined him, saturating the area with light. The men noted a rock impact sound behind them.

Shortly thereafter, extremely fatigued and tense, the men turned in for the night.

04:30 – While in bed, Brown and Stewart heard a “loud rock impact” on the cabin roof. Both men remained silent, assuming everyone else was asleep. Stewart fell asleep shortly after the men heard the sound. McClurkan and the Strains were already asleep.

04:45 – Brown heard multiple instances of motion outside through the window near the top bunk bed, where he was sleeping. First, he heard what he determined to be the sound of hickory nut shells against the kitchen wall. Then, he heard “three clear footfalls over clear ground” (he heard no crunching noises). He next heard “small metallic sounds,” tapping, coming from the area of the water spring behind and north of the cabin. Brown then detected what felt and sounded like a push or lean against the northeast corner of the cabin. He believed it was something large coming onto the porch located on the east side of the cabin. Brown noted that the “entire structure” audibly shifted. At that time, Brown climbed down from the bunk and slept for a few hours on the old recliner in the middle of the room. Although McClurkan and Stewart were snoring during the cabin movement, the sound apparently woke both up because both of them later recalled Brown’s verbal response vividly as he moved from his bunk to the chair, saying, “*That’s it; I’m done...*” (Adapted from Operation Persistence Bravo team after-action report from May 17, 2012, unpublished.)

After an extremely active night that included a visual contact via thermal optic and a number of rocks pelting the cabin, Charlie team of Operation Persistence attempted to get sleep in the cabin, but they were unsuccessful due to continued activity that culminated in a cabin-shaking impact that woke them all. The following is adapted from their after-action report, derived from their field journals:

04:00 – While the other men attempted to get some sleep, Paul Bowman remained awake and vigilant, using thermal and night vision equipment to watch out the windows of the front bedroom.

05:25 – Unable to stay awake any longer, Paul Bowman fell into a deep sleep.

05:30 – Colyer, sleeping on a cot right by a window in the kitchen area in the back of the cabin, was awakened by the loud slam of a rock striking the cabin tin roof. Colyer

was becoming angry as he tried to sleep and the cabin and surrounding structures had continued to get pummeled by rocks.

05:30 – 05:45 – Colyer heard “shuffling, rustling, and foot thumps behind the cabin.” At one point he heard what sounded like “someone fiddling with the base of the cabin just on the other side of the wall” from where he slept on his cot in the kitchen area. It was now slightly light and Colyer rose up to look out the windows. He saw nothing so he went back to sleep.

05:50 – Every man inside the cabin heard and felt—except for Bowman, who apparently had entered into a very deep sleep—“a tremendously loud and enormous impact on the side of the cabin.” In his notes, Colyer described the sound as “KA-BAM!!!” Colyer described himself as being “half-asleep” when the loud sound erupted from the silent morning. Colyer quickly bolted from his cot, grabbed a rifle, and sprinted out the front door, and ran around the east side of the cabin, with the other men following close behind him. They all stood there looking into the surrounding woods and up on the wooded slope of the mountain. They saw nothing.

Lawrence was certain that the collision occurred at the west end of the cabin on the wall of the west bedroom, where he had been soundly sleeping. His shotgun leaned against the wall beforehand, and came crashing down to the ground after the impact. The men believed the sound was the result of an ape hitting the cabin with its arm, kicking the cabin, or as Marvin Leeper said, “To me it was like it had just put its shoulder down and rammed the wall of the cabin.” The men found no damage to the cabin. (Adapted from Operation Persistence Charlie after-action report from May 26, 2012, unpublished.)

Although perhaps not an approach to the cabin in the strictest sense, the next after-action excerpt indicates that Alton Higgins was particularly disturbed, as he slept inside Paul Bowman’s large Kifaru teepee, by the sounds—and impact vibrations—of a large, heavy lumbering animal as it walked right outside the walls of the teepee:

10:00 – Higgins arose to clear and windy conditions with a temperature of 72° F. Lawrence and Diaz remained asleep in the cabin. Higgins had not taken his journal with him to the teepee and so was not able to note everything he had heard during the night. He noted in his journal once he retrieved it:

Last night was very active...didn't have my journal, so I wasn't able to keep track. The apes are here; I've no doubts, and [they] may even be near as I write. Just within the last hour I've twice flushed a large animal standing just off the path near the base camp cabin, and rocks have been thrown. It's important to note that I can hear really well from inside [the] teepee; it's the same as sleeping outside. I heard the sounds of something coming down the mountain, knocking rocks loose in a manner as if to say, 'I don't care who hears me coming.' [Hill and Higgins had heard something similar.] I heard the disturbance created by huge-sounding creatures moving noisily through thick vegetation, large branches moving and sticks breaking, reminding me of what elephants might sound like if forced to walk through this tangled jungle that surrounds us. I heard what sounded like boulders being tossed in the rocky stream beds south of the other cabins. I heard tremendous 'BANGS' as rocks struck the metal roofs and/or sides of at least four different buildings within the compound. These events occurred throughout the night. At 0650 the most disconcerting event of all took place. I heard something walking slowly—it must have been on a path or road—at a pace of about one step per second. It [was] a lumbering pace. I wasn't hearing it walk as a result of hearing leaves crunch or twigs snapping; I heard the impact of great weight on the ground, and more than that, I could feel the impact as I lay in my cot. It must have been close. A mystery: Why aren't the apes always stealthy? (Adapted from Operation Persistence Echo team after-action report from June 8, 2012, unpublished.)

In July 2012, another close and disconcerting approach to the cabin occurred, resulting in Ken Helmer being pushed through the window as he slept. Helmer yelled out to his teammates and was extremely unnerved by the event. An abridged excerpt from his team's after-action report follows:

02:00 – Colyer and Helmer retired for the evening. Colyer took the top bunk above Lawrence, who was on the bottom bunk. Mayes slept on a cot in the main room. Helmer slept in the east bedroom. He remained awake for about 45 minutes before sleep took over. He fell asleep with his bed directly against the outside south wall, the open window to his back.

03:24 – Lawrence, Colyer, and Mayes were awakened by Helmer's calls for help from his bedroom. Next the men heard several loud impact noises, presumably on the wall, and then they heard some indecipherable vocal sounds.

Helmer told the men that something had just pushed him through the window as he slept. Later, Helmer recalled the incident thusly:

I was asleep on my left side when something pushed me away from the side window (south window)...I was pushed on my buttocks/hip area about a foot or two. I was immediately fully conscious and trying to move away...and I then felt a slight pressing down and a pull toward the window on my right hip. I began to yell for help...I want to add that I had closed the gaps in the screens in the bedroom windows before going to bed. The screen on the south window was pushed inward. The next morning, several gray/light hairs were found in a splintered area of the window sill just below the opening in the screen. (Adapted from Operation Persistence Kilo after-action report from July 18, 2012, unpublished.)

As mentioned by Helmer, his team discovered hairs embedded in the window screen the next morning. (For more on the hair, go to the Hair and Blood sub-section of Other Evidence.)

While conducting overwatch for their team, Brad McAndrews and Jeff Eltringham documented a close approach to the cabin on the morning of May 6, 2013. The following is adapted from their team's after-action report:

01:55 – The team retired to their respective cots, tents, and beds. McAndrews and Eltringham elected to conduct overwatch while the other members slept. Eltringham took watch for the first three hours; McAndrews would assume overwatch duties for the final three hours, getting the team well into the hours of sunrise.

For the next several hours, the night remained quiet and uneventful.

04:30 – Eltringham summoned McAndrews from sleep, who had been snoring and sleeping soundly.

McAndrews began overwatch.

06:04 – McAndrews heard a “crash...something man-made being impacted” from the direction of the south cabin.

06:15 – While observing gray foxes (*Urocyon cinereoargenteus*) in front of the base camp cabin, McAndrews heard the distinct and close sound of “metal crumpling as if something was walking on metal” from northwest of the cabin. McAndrews believed the sounds were coming from the vicinity of the west shed immediately by the base camp cabin. He was frustrated because he could not see the area immediately west of the base camp cabin—the area where the west shed and the wood shed are located—because Brown’s truck was parked in front of the cabin in such a way that blocked visibility of the area from the vantage of the overwatch tent. McAndrews felt an immediate adrenaline rush. He considered trying to quickly bolt from the overwatch tent, but ultimately decided that whatever was there to the west of the cabin would hear him and immediately leave.

Approximately four seconds later, McAndrews heard a “clear whoop” that came from somewhere behind or near the west shed.

At that time, McAndrews observed the foxes hurriedly scamper off to the east. McAndrews next heard a short vocalization from one of the foxes, obviously distraught and agitated. The gray fox vocalization lasted about a second and came from the west.

06:17 – McAndrews heard what he described in his field notes as “chatter”—a sort of faux speech—from somewhere west of the shed, perhaps only ten yards away from it, moving south. After about ten seconds or so, McAndrews woke Eltringham. During this time, McAndrews continued to hear the sounds of metal even as the “chatter” sounds seemed to move off toward the main trail through the compound. Eltringham heard the “chatter” and tried to discern familiar sounds and speech patterns but he could not.

06:20 – Using the Relm radios, McAndrews attempted to contact Hestand, who was sleeping in a tent in an open area of tall grass beyond the woods west of the base camp cabin, perhaps sixty yards from the base camp cabin. Hestand had turned the radio off and therefore did not respond; however, Hestand was awake and had clearly heard the metal sounds. Hestand wondered why anyone on the team would be up at the crack of dawn and tearing things down or building things using metal. Hestand later described the metal sounds as sounding “as if a stick were being dragged across

corrugated metal” repeatedly, and continuing for minutes. Hestand found the sounds obnoxious.

06:23 – Eltringham left the overwatch tent to make contact with Hestand and Porter. Eltringham walked down the trail and loudly announced himself to Hestand and Porter. Eltringham asked the two men if they had produced the chatter sounds that McAndrews and Eltringham had heard. The men replied that it had not been them.

07:05 – McAndrews emerged from the overwatch tent, and others on the team began emerging from the cabin. (Adapted from Operation Relentless Bravo team after-action report from May 6, 2013, unpublished.)

Travis Lawrence documented an unnerving close approach to the cabin when he was there alone awaiting the arrival of his teammates in June of 2014. The following is from his field report:

18:55 – A light rain lasting only about 15 minutes swept in and wet the valley. During this time, Lawrence sat on the porch, listening to the sounds, and observing the sights around him. After the rain stopped, the sky was highly overcast causing the valley to be unusually dark for as early in the evening as it was.

20:50 – Now almost totally dark, Lawrence was quite startled as a gray fox (*U. cinereoargenteus*) jumped up on the west side of the porch a mere six feet from his boot. Lawrence immediately noticed that the fox looked ready for a fight as the hair on the small canid’s arched back was raised and it was intently gazing in a northwesterly direction behind the cabin (Lawrence was to the east of the fox). Within a few seconds of the fox jumping on the porch, Lawrence heard a lot of sticks start breaking about 15 yards west-northwest of the porch and getting closer in what he believed was an obvious bluff charge of a large wood ape. During the ruckus, Lawrence clearly heard “an awful low-pitched growl, accompanied by several snorts.” After the loud charging sounds started, the fox turned and ran off the south side of the porch and shot under Lawrence’s truck obviously to hide. Lawrence’s impulsive reaction was to stand and start yelling at the unseen noisemaker while brandishing his pistol and shining a light into the west woods. As Lawrence started yelling, the sounds stopped and he could clearly hear the large animal moving away to the west, though it was not making much noise as the ground was still very wet. Not wanting to deal

with this type of behavior while there alone, Lawrence retired inside and noted that this was the first adrenaline rush of his summer.

21:30 – Sitting in the west bedroom reading, Lawrence heard a loud “rock on metal” impact he believed had come from the west cabin and noted that the night was extremely dark due to the heavy cloud cover (also there was a new moon).

21:40 – Lawrence turned off his lights and lay down.

21:45 – Lawrence heard an “enormous crashing sound” come from the west of the cabin in the woods that sounded like “a large log being violently hurled upon the rocky earth.” Lawrence estimated the sound to be no more than 50 yards from the cabin.

21:50 – Lawrence very clearly heard a “mouth pop” at an estimated 10 yards to the west outside his window. (Adapted from Operation Tenacity Foxtrot team after-action report from June 27, 2014, unpublished.)

Approximately two weeks later, the cabin was again approached by a large animal that the team believed had been a wood ape. The week had actually been relatively inactive, with little activity documented. This particular incident occurred, as usual, while the team slept at night. No one provided overwatch because it had rained considerably and the rain continued to fall. The following is adapted from the after-action report:

The team did not specifically document the time, but sometime between midnight and 01:00, Jeff Davidson, sleeping in the tent with Alton Higgins, was suddenly roused from his sleep. In his own words, he said “All of a sudden, I was wide awake and had no idea why.” As he sat in his cot, he noted that the rain was still falling “steadily but lightly.” Then he heard “a large animal walking with heavy footsteps of an even cadence - about one step per second.” As the animal neared the tent, Davidson heard the animal growl. As Davidson attempted to wake Higgins the animal growled again. Higgins awoke, but the animal uttered no more growls.

Meanwhile, Bill Coffman, sleeping in his truck parked on the south side of the cabin and about 15 yards from the tent, was also awakened by something he could not pinpoint. He heard presumably the second growl of the animal along with several

footsteps of an animal that walked along the west side of his truck and along the western wall of the cabin.

About 15 seconds later, all but Travis Lawrence clearly heard a “loud thud” from the east side of the cabin, much like a hand slapping the wall. The “thud” had awakened Gene Bass, who had been soundly sleeping on the east side of the cabin.

01:30 – Lawrence, who had slept soundly, was awakened by his alarm. He assumed OW completely unaware of the events of the previous hour. It was still raining lightly.

03:30 - It started to rain heavily. The deluge caused the OW tower to start leaking, which caused Lawrence and the thermally equipped rifle to start getting significantly wet. Not wanting to test whether the thermal could handle the rain, Lawrence retired inside the cabin.

07:30-08:00 - The men began the day as a light rain continued to fall. The previous evening, Lawrence had set a coffee cup on hood of his truck to act as a rain gauge. It was filled to the brim, indicating at least four inches of rainfall overnight.

Not long after waking, Higgins brought up the topic of the events of the previous night, unaware that anyone else would be able to corroborate the event. Higgins was surprised and pleased to learn that everyone except Lawrence had been aware of the visitor and had heard the same sounds. (Adapted from Operation Tenacity Hotel team after-action report from July 9, 2014, unpublished.)

As he waited for team members to arrive and join him, Alton Higgins spent several days and nights at the study site alone. He was unnerved a number of times by certain events as the days and nights passed. Perhaps the most unnerving time for Higgins occurred on the morning of August 3, 2014 as something large, heavy, and audibly bipedal, stepped onto the front porch, waking and startling him:

05:00 – Higgins was awakened by what he thought was a person inside the cabin.

In his journal, he would later elaborate concerning the event:

Well, that is what it sounded like, the sound of walking in the cabin. I was instantly awake, listening to the creaking of the cabin in response to the heavy steps and the slow pace, estimated at a bit less than one second between steps. For a moment I thought it must be one of our guys, but that didn't make sense because I had barricaded the front door with a chair. I lifted the curtain on the window next to my cot and saw it was pitch black outside, as it was in the cabin. The walking continued, and I realized it must be on the front porch. My best estimate as to how long the walking continued was about thirty seconds, then I heard it walk away, apparently to the east. Trying to figure out which gun to take, I decided on the Lapua. I turned on a dim red cap light and turned on the rifle's thermal scope, then walked to the front room. Everything was as I had left it the night before. I looked out the front window, but of course saw nothing in the dark. The visitor was gone from the cabin, but I thought it could still be in the vicinity, so I decided to enter the OW tower.

05:10-07:30 – Up in the OW tower, Higgins was on alert. The “visitor” had unnerved him and he remained vigilant, constantly scanning via the thermal scope all around the area.

07:09 – Higgins heard a “knock” from the south cabin area.

07:40 – Fatigue overcame Higgins; he returned to his sleeping bag for more sleep.

09:38 – Higgins was awakened by a “loud nut fall” on the roof over his head. He noted the temperature was 68° F.

09:57 – Just after searching for rocks and finding none behind the cabin and in front of the east shed, Higgins heard a “wood impact (rock on wood?)” from the south cabin area. Higgins carried his scoped Remington .30-06 bolt gun and his Taurus Judge revolver sidearm.

10:38 – Higgins caught up with his journal entries. He wrote: “I’m extremely frustrated at missing what may have been my best chance to collect a specimen. I just could not stay awake last night, constantly nodding off. No way I could have lasted another six hours for the porch visitor.”

10:50 – Higgins provided an addendum to his previous field journal entry:

Thinking more about what happened, the visitor may have stepped onto the porch like we do and walked up to the front door, which is actually two doors. Last night the outer door was/is still propped open with a rock, like it usually is during the day, but there is a sheet of thin trash bag plastic hanging in front of the inner door that is free to move in the breeze. (It is a breezy day.) I'm guessing this may have aroused its curiosity. Either that or it wanted a closer look at the Miss August pinup displayed on the front window. Anyway, I think it then backed away from the door and walked to the west end of the porch, knocking a pair of gloves off the end of the table in the process, then it walked back and left the porch as it had entered. Nothing else on the table had been disturbed. I walked out towards the bottleneck and saw where something apparently large had cut through the marshy area just east of the east shed and had angled toward the big target tree, leading me to wonder if it had gone up the mountain at that point. Did the early morning visitor leave when it realized that I had stopped snoring? (Adapted from Operation Tenacity Lima team after-action report from August 3, 2014, unpublished.)

Later that month, Bob Strain, Kathy Strain, and Blake Kellum were awakened in the night by something that forcefully struck the back (or north) wall. They believed it had been another visitor that approached the cabin and struck it:

01:00 – The cabin wall—on the north or northwestern section—was loudly struck with a good degree of force. Kellum and K. Strain both heard the loud sound—B. Strain was in a deep sleep—described by K. Strain as an “extremely hard...cabin slap.” (Adapted from Operation Tenacity Papa team after-action report from August 31, 2014, unpublished.)

Several days later, with Kellum no longer there, the Strains again experienced something coming up to the cabin:

05:30 – The Strains were roused when “something hit or shoved” the aft or north wall of the cabin near the shower area. K. Strain recorded in her journal that it had sounded “like another slap.”

08:30 – The Strains were once again awakened by “a very strange sound” as a light rain fell. The pair was very startled to hear what sounded like someone moving about inside the cabin, before hearing the sound of an animal vigorously “shaking water off...(like a dog).”

B. Strain immediately grabbed his weapon and proceeded to investigate, cautiously moving throughout the cabin, with his weapon at the high ready. All seemed normal. K. Strain checked the porch but saw nothing out of the ordinary there. The pair believed whatever they heard—it had significant weight and made significant noise—had very likely stepped up on the porch and then quickly retreated once B. Strain began moving through the cabin. (Adapted from Operation Tenacity Papa team after-action report from September 3, 2014, unpublished.)

Visual Contacts

Over the course of four years—being conservative in what constitutes a true visual encounter—NAWAC team members observed the species a total of 49 times. The vast majority of these visual encounters lasted no more than two or three seconds at the most; however, there were a few visuals that were several seconds in duration. The most notable and significant of the visual encounters will be provided here.

On July 3, 2011, at 19:15, upon hearing a rock loudly strike one of the cabins, Daryl Colyer, Alex Diaz, and Travis Lawrence moved quickly to investigate while Alton Higgins remained at the base cabin. Colyer took a semi-automatic 12-gauge. Colyer and Diaz crept slowly and stealthily westward along the trail toward the loud bang, with Diaz moving behind Colyer at a distance of perhaps 25 yards,” while Lawrence moved along the creek. The following is adapted from their after-action report:

Colyer crept quietly, slowly, and methodically, walking ten to fifteen yards to listen, and then proceeding further west, where he believed the sound had originated. Colyer kept hearing what sounded like movement in the woods further to the west, so he continued westward after observing Diaz behind him slowly coming up the trail.

As Colyer rounded the corner, he observed a large upright brown hair-covered figure walking smoothly in the woods. Colyer clearly saw the animal from the knees up and instantly identified it as a brown wood ape with a pointed head, walking south and angled slightly away from him. It was apparently unaware of Colyer, and was walking

across an opening of vegetation perhaps six to eight feet wide; it was a narrow window with thick hedges of vegetation on both sides. Colyer noted that the ape was hairy all over and that there was long hair on the head.

Colyer instinctively targeted the ape with his shotgun from ninety feet away after observing it for approximately two to three seconds. He fired his shotgun until the magazine was empty (nine rounds: two 000 buckshot rounds and seven rifled slugs). Colyer saw no movement after that. The animal had disappeared because it had fallen, Colyer thought, or because it had fled behind a wall of thick vegetation further to the south toward the creek.

After Colyer emptied his shotgun, he hurriedly moved to the spot where he had seen the ape and fully expected to see a body on the ground. There was no body, but there were tracks and scuff marks in the soil. He also saw a tree that took the majority of his slugs. (Adapted from Operation Endurance Echo team after-action report from July 3, 2011, unpublished.)

Colyer, Diaz, Lawrence, and Higgins searched until it was dark for a body or blood but they were unsuccessful. The next morning the men returned to the site and more closely examined the tracks and scuff marks. One track had what appeared to be toe impressions and the tracks were sixteen inches in length. The heel-to-heel measurements were 64, 59, and 52 inches. The men also searched again for a body or blood but they were unsuccessful.

On July 12, Mark McClurkan, as part of the next team, found a number of significant spatters of dried blood in the creek on rocks and a trackway of sixteen-inch tracks in soft soil by the creek. It appeared McClurkan had found what Colyer, Lawrence, Higgins, and Diaz had been unable to find. The blood was dried, and had lay in the summer sun for over a week with temperatures well into the 90s; the weather had been completely dry with no rain (see Other Evidence for more about McClurkan's find).

The next significant visual encounter again involved Colyer. On May 10, 2012, while sitting in a mirror blind as his partner Rick Hayes exchanged memory cards on Plotwatcher cameras, Colyer observed a very large gray wood ape between his position and Hayes, who was out of visual range. The following is adapted from their after-action report:

13:45 – Colyer turned to look west and observed a large upright bipedal animal 50-60 yards away. The animal was gray with light-colored feet (possibly the soles), and some sort of light or white coloration in the buttocks area. Colyer saw it quickly, fluidly, and smoothly step from a mossy green boulder up onto the bank near Plotwatcher 2. The animal quietly disappeared behind the thick wall of vegetation. It was a fleeting glimpse. In a second the animal was completely gone. Colyer noted that the animal was agile and its movement was natural and with ease.

14:15 – Hayes returned. He was slightly disturbed when he learned that Colyer had seen an ape (Hayes was probably at Plotwatcher 4 or 5 when Colyer saw the animal). The men surmised that it was probably trying to keep tabs on Hayes, and had no knowledge of Colyer. (Adapted from Operation Persistence Alpha team after-action report from May 10, 2012, unpublished.)

Later on, when Hayes tried to reenact the sighting and had trouble even climbing onto the boulder where Colyer had seen the large gray animal step with ease and agility, Colyer noted that Hayes appeared almost dwarf-like compared to the massive animal Colyer had observed. The wood ape appeared to Colyer to have been around eight feet tall. Colyer dubbed the animal “Old Gray,” because it was almost entirely gray (Figure 51).

The next significant visual encounter was on May 13, 2012, at the same location, and was one of the more lengthy visual contacts for NAWAC teams. This time, Ken Helmer sat in the mirror blind. The following is adapted from his team’s after-action report:

18:10 – Some 80-90 yards away, Helmer saw a black, upright figure step out and look toward him for a few seconds before it disappeared back into the foliage. Within just a few seconds, the figure re-emerged, again curiously looking toward Helmer, perhaps directly at him. Helmer could clearly see its arms dangling on the sides, and could see clear separation between the legs. Helmer noted that the subject was entirely black, “face and all.” After standing there facing Helmer for approximately four or five seconds, the figure again disappeared into the foliage. At that point, Helmer raised his .30-06 with a nine-power scope to view the subject through the scope, but it never reappeared. (Adapted from Operation Persistence Bravo team after-action report from May 13, 2012, unpublished.)

Helmer had been wearing a GoPro video camera at the time; however, the 8GB disk had filled prior to Helmer's visual and the visual encounter was not recorded on video. Helmer recalled that the figure he had seen—given the name “Blackie” by Helmer—distinctively had very broad shoulders with a “V” taper toward its waist.

The next day, May 14, 2012, also provided a flap of significant visual encounters that all occurred very near the base camp cabin. The following is adapted from the after-action report provided by Kathy Strain, Bob Strain, Brian Brown, Mark McClurkan, and Ken Stewart:

18:30 – A loud rock strike was heard on the east cabin [located approximately 40 yards from the mountain slope to its north]. Brown, Stewart, and McClurkan went to investigate. Approximately 50 yards east of camp a small rock hit a tree north of the team and bounced to the ground. The team paused to observe the slope and then decided to continue on to the east cabin where they had heard the first rock impact sound. The men heard movement to their northeast; it sounded as though the movement was heading west. The team then heard movement lower down the slope and continuing east.

McClurkan held the rest of the team and moved forward. Approximately 20 yards down the ATV trail, directly behind the east cabin, McClurkan saw a flash of light colored movement north of his position. The animal then crossed the run-off behind the east cabin causing rocks to slide down the run-off and some branches were seen moving to the east. Due to the thick brush, B. Strain was called over with his big bore .458 rifle should the opportunity to collect a specimen present itself.

After B. Strain left camp, K. Strain heard a loud rock strike on the south cabin. Then she noted, just to the east of the shed that is east of the base camp cabin that “something peeked out from behind some branches and then let them go”; apparently once whatever it was knew K. Strain was watching, it hastily retreated behind the thick tree limbs and foliage. K. Strain had been unable to determine what it was that had moved the branches to apparently look at her; she only saw the branches move and that there was something behind it (but she did not know what it was).

As the rest of the team was returning, they all heard rocks “skittering down the slope” of the north mountain. Brown and McClurkan walked toward the “peeker” area and

noted that there was a trail leading to the east that could easily obscure a retreating animal from that location. Stewart, Brown, and McClurkan headed to the south cabin to investigate the rock impact sound that K. Strain had heard. At that time, B. Strain began investigating the location of the “peeker” with K. Strain’s assistance in locating the exact spot. He put himself directly into the bushy area and noted that there were three logs in the location, but no movement or other indication of an animal.

19:45 – The team heard steps in the clearing east of the cabin. McClurkan stated that it was probably just the fox because it was so loud, but the rest of the team had heard bipedal steps, rather than the usual shuffling associated with the fox. Brown and McClurkan noticed a figure that appeared to be small and black at the foot of the slope. A few seconds later as the team began talking again K. Strain quickly stood up, pointed, and exclaimed, “Look, there they go!” Brown, McClurkan, B. Strain, and K. Strain all observed two upright animals quickly moving up the slope of the north mountain. The team estimated the speed of the two animals to be at or near 20 miles per hour. K. Strain pointed and commented to B. Strain, “I told you they were still there!”

K. Strain got a reasonable view of the larger animal and perhaps the best view of the four investigators. She was able to note “well-defined muscles” and she could see that the animal was leaning into its stride as it ascended the mountain. She also noted that its feet were “splayed for traction.” She noted that there had been “hesitation,” particularly in the smaller one of the two, before the two animals bolted up the mountain in an enormous burst of speed and agility.

Brown observed “two black streaks proceeding at a high rate of speed up the mountain” from above the location he had noted the previous black figure.

B. Strain saw two figures, partially obscured by foliage, moving rapidly up the side of the mountain, like they were “on a cable.”

McClurkan turned in time to observe “only the legs of one animal moving in a scissoring motion, like a human running.”

All team members noted that the movement of the animals was “extremely smooth.”

Moments later while watching the mountain slope, McClurkan observed a black wood ape walk from east to west on the plateau above the clearing. He got a clear view of at least the waist up of the animal and had no time to take a shot due to the foliage. After observing the hillside for several minutes Brown stated that he had observed what appeared to be some kind of movement on the slope, higher up and slightly to the west of where the two figures had disappeared earlier. Within two minutes of Brown's declaration, McClurkan saw a wood ape through his scope that stepped into a clearing at the top of the slope. It moved in a side-stepping motion from west to east. The view lasted only about two seconds, but was a full frontal view of the ape with light showing under its arms, between its legs, and over its head. By the time McClurkan could move his cross-hairs from the lower abdomen to the vitals, the animal had stepped out of view. While at the location, it became clear to Brown and McClurkan that what they had seen was not, in fact, a small figure at the base of the slope, but one of significant size. Due to the depth of grass and little to judge the scale of the animal, it was simply too difficult to get an accurate size estimate from their seated locations. Several minutes later, the team retreated to the fire circle to discuss the events. (Adapted from Operation Persistence Bravo team after-action report from May 14, 2012, unpublished.)

Several days later, while in the mirror blind, where Colyer and Helmer had had visual contacts, McClurkan had another visual contact that, in the assessments of his teammates, obviously disturbed him. The following is adapted from the after-action report of May 18, 2012:

19:10 – McClurkan heard what he interpreted as “short range knocking/popping sounds.” He could not determine whether they were some sort of tongue clicks or perhaps even chest pops or thumps.

19:15 – McClurkan radioed the other team members. He heard a wood knock to the south. McClurkan heard a large animal perhaps thirty yards to his east, behind him.

McClurkan was still hearing the odd popping or clicking sounds. The odd sounds were coming from the south and there were responses from the west. McClurkan remained alert and continued to monitor the odd sounds.

19:30 – McClurkan was still hearing the clicking or popping sounds: one from the south and another from the west.

19:55-20:00 – After having heard the odd clicking sounds go back and forth for a considerable amount of time, McClurkan decided to respond in kind. McClurkan clicked his tongue loudly in an attempt to mimic the sounds. The animal to the south growled in reply. The growl was “deep, guttural, menacing...a warning.” At that time, via radio, McClurkan requested immediate assistance.

Stewart and Brown began sprinting down the main trail in the direction of McClurkan.

McClurkan heard movement toward him from the south; he called again on the radio requesting immediate extraction.

At that moment, all within several seconds, McClurkan heard a large animal approach his position from the south-southeast. He heard the loud thumps of heavy feet start slowly and rapidly increase in tempo as the animal sprinted toward him. The animal charged toward McClurkan, approximately from his 7:30 to 8:00 o’clock position. McClurkan attempted to rise from his chair and turn to face the charging animal. At 40 to 50 feet, McClurkan could make out parts of the animal as it rapidly headed toward him: the visibility was broken by foliage, but McClurkan could clearly see an animal that was upright, black, and on two legs charging toward his position. The animal made no vocal sounds. McClurkan could hear the feet hitting the ground and the trees and vegetation being pushed aside. The animal was moving extremely fast. Later, McClurkan would recall that the animal moved at least as quickly as a deer. From the low-ready position, McClurkan fired a shot in self-defense as he turned; he fired at about his original 9:00 o’clock position because he could not get completely turned around to confront the animal.

Brown was still sprinting toward McClurkan when he heard the loud report from McClurkan’s rifle.

As soon as McClurkan fired his .30-06 in a desperate act to defend himself from the large, black, rampaging ape, it turned to run away; McClurkan noted that the animal was slipping on the ground due to its incredible momentum. McClurkan quickly

chambered another round, kicked the chair over, kicked the blind down, and fired again, this time more directly in the vicinity of the animal, but the animal had retreated and was out of sight. McClurkan saw his second round hit a tree.

After he fired his second shot, McClurkan steadily shouldered his rifle and began walking to the cabin. (Adapted from Operation Persistence Bravo team after-action report from May 18, 2012, unpublished.)

The next visual encounters occurred around midnight on July 6 into the early minutes of July 7, 2012. As provided in the Reflective Eyes section, Travis Lawrence, John Dollens, and Daniel Dollens had seen large reflective eyes up on the mountain slope behind the cabin, to which Lawrence referred as “Ironman.” The encounter did not end with the reflective eyes. The following is adapted from their after-action report:

23:57 – Looking through the thermal, D. Dollens spotted movement. He believed he saw the shoulder of an ape as it moved through the thick brush. All the men saw movement as the brush illuminated by the light began to shake. As the brush shook, Lawrence, from his position saw a “huge gray ape arm” as the animal turned to run up the mountain. Lawrence described the arm as “the right arm...it was gray and huge, probably a foot in diameter.” J. Dollens, from his position, saw most of the upper half of the ape. He reported that he could see the right bicep, the shoulder and part of the head. He described it as “large and gray, similar in shape to the first ape, but significantly smaller.” The men immediately identified this ape as the one investigators referred to as “Old Gray.” The men heard a crash to the south. Lawrence then yelled toward the mountainside. Immediately afterward, Lawrence heard a low growl emanate from the mountainside.

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00:02 – D. Dollens saw a large animal move on the mountain through the thermal.

00:04 – As the rain continued to fall lightly, the men walked east and scanned down the base of the mountain.

00:10 – The team heard movement on the slope and Lawrence yelled at the mountain.

00:13 – The men decided to go ahead and walk up the slope. As the men neared the base of the mountain, they all heard an “enormous crashing sound of heavy movement and sticks breaking.” The sound was of a huge animal moving quickly, making lots of noise and heading straight toward the men. All the men knew instantly that they were being charged. J. Dollens centered the flashlight on the trees to the north with one hand while he held his sidearm in the other, while D. Dollens looked through the thermal and Lawrence centered his rifle in the flashlight beam waiting for the animal to emerge. The men could see the foliage moving heavily as the animal charged. The animal got about 15 yards from the men and turned and ran back up the mountain. As it was running back up the mountain, D. Dollens saw the head and both arms of an ape through the thermal imager. He described it as having “a huge pointy head...with enormous shoulders and arms.” D. Dollens put extra emphasis on the size of the head. He stated that “the head was much larger in proportion to the shoulders than the head of a human would be.” All the men immediately agreed that they had been bluff-charged, a common characteristic of great ape intimidation behavior. (Adapted from Operation Persistence India team after-action report from July 6-7, 2012, unpublished.)

A very significant visual contact—certainly the closest clear visual over the course of the four year period—occurred just before midnight on August 24, 2012. Mark McClurkan and Alex Diaz, as part of an ad-hoc three-man team in the aftermath of the recently wrapped-up Operation Persistence, had just arrived at the cabin and were unloading their equipment from McClurkan’s vehicle for a three-day and three-night stay; they had been at the cabin for less than ten minutes. The men were expecting the arrival of their third team mate Ken Helmer. The moon was in the first quarter phase—almost a half-moon—the sky was clear, visibility was quite good, and temperatures were normal for nighttime southeast Oklahoma in August.

Diaz was inside the cabin tending to equipment; McClurkan was standing outside facing the cabin, near the teepee that Paul Bowman had erected earlier in the year and had left in place to the south of the cabin. McClurkan heard what sounded like a rock being dislodged behind him near a rock fence to the south of the cabin so he turned on his flashlight and turned to see what had created the rock displacement sound. McClurkan was stunned when he unexpectedly saw, only 15 yards or so away from him near the rock fence, a huge gray wood ape standing there facing him and staring, its eyes reflecting the flashlight in a sort of

green hue. Almost immediately after McClurkan illuminated the animal, it calmly turned around and walked off into the darkness out of the illumination range of his flashlight. McClurkan had seen the upper two-thirds of the animal, the head and face, before it turned; however, his best view was of the backside of the wood ape as it strolled off into the darkness out of visual range. McClurkan saw the arms, the back, the buttocks, the upper legs, the back of its conical head, and where the head fused into the upper back. He estimated its height to be in excess of eight feet and its color was gray. The visual had lasted five or six seconds. McClurkan believed he had seen “Old Gray,” (M. McClurkan, personal communication, August 26, 2012).

On May 1, 2013, as part of the first team for that year, Paul Bowman and Daryl Colyer recorded their visual encounters of that day in their team’s field journal. The following is adapted from their after-action report:

14:59 – The team heard a very loud impact sound from the vicinity of the west cabin.

15:10 – Colyer and B. Strain went to the west cabin to investigate. When the two men reached the west cabin, they quickly devised a plan: Colyer would go to the rear of the west cabin and post; B. Strain would remain on the main trail but would move to the west to intercept anything that Colyer might flush westward. Colyer quietly walked along the east fence of the west cabin. When he reached the back fence he picked a spot beside a small tree and sat down facing the draws and creek area to the south; the creek was approximately 30 yards to the south. He could hear the water running in the creek and could see parts of the creek through holes and gaps in vegetation.

15:13 – Colyer saw two large animals through the holes in the vegetation move rapidly to the west before turning south to cross the creek. Colyer could hear the animals splashing in the creek as they crossed it. The animals were close to one another and one was behind the other; the first appeared to be vertical in posture to Colyer and the second one appeared to have more of a horizontal posture. Colyer caught a brief glimpse of leg movement as the animals turned to cross the creek. Colyer noted that the animals were “charcoal” in color: lighter than black and darker than standard gray. The sun was shining on both animals. After sitting there for a few seconds processing what he had just seen, Colyer immediately got up and attempted pursuit of the animals. By the time he reached the creek the animals were out of sight

and with the roar of the creek waters, Colyer could hear no sounds that he could associate with the animals. He looked around for movement but detected none. Then he turned around and began walking back to his spot. He then decided to head up the draw to the east, thinking the animals might double back in that direction, especially since so many sounds heard by the team had been coming from the vicinity of the south cabin.

15:23 – Bowman, who had joined B. Strain, was standing approximately seven yards behind Strain. Bowman observed an “upright figure 80 yards to the south” behind the west cabin, initially walking toward Bowman and B. Strain, with the west cabin between the two men and the subject. The subject then turned and walked to the northwest behind the west cabin RV. The subject was reddish-brown around its head, which Bowman described as resembling that of a bow-hunter's veil with a pointed crest. Along the arms was a mottled brownish color and the chest and abdominal area were both of a single-tone dark color; the face was dark too. Bowman noted that the arms were swinging freely as the subject walked westward. Bowman observed the figure for 5-6 seconds before he lost sight of it as it headed into thicker foliage behind the west cabin RV. (Adapted from Operation Relentless Alpha team after-action report from May 1, 2013, unpublished.)

Another observation of a pair of wood apes happened on June 20, 2013, as Travis Lawrence and Phil Burrows attempted to locate each other in the dense woods southwest of the base cabin. The following is adapted from their after-action report:

17:17 – As Lawrence was attempting to locate Burrows, he saw two large gray legs “scissor” as the large animal walked through the dense foliage perhaps 30-40 yards away. For a split second, he believed he was seeing Burrows, but then he realized that it was indeed not Burrows. Very quickly he saw another separate set of large gray legs (two distinct animals) of a wood ape as it bipedally moved away in the thick brush. Both wood apes were moving south and away from the two men. (Adapted from Operation Relentless Hotel team after-action report from June 20, 2013, unpublished.)

On June 27, 2013, Ken Helmer watched for about three seconds, through an ATN ThOR thermal scope, “a large, upright animal in the brush walking away” and heard it loudly

crashing as it escaped through the dense woods (Adapted from Operation Relentless India team after-action report from June 27, 2013, unpublished.)

A few days later, while using the handheld GSCI TIM-14TTX thermal optic on July 1, Jordan Horstman had an even clearer visual contact. Horstman and McAndrews were conducting nighttime overwatch in the polyethylene overwatch tent when Horstman observed a wood ape. The following is adapted from their after-action report:

05:08 – Scanning to the southwest with the handheld thermal, Horstman identified a “white hot” signature that appeared to be the upper third of a wood ape—“shoulders and head”—as it emerged from the southwest woods and walked out onto the trail moving to the southeast, approximately 25 yards to the southwest of the overwatch tent. The lower portions of it apparently concealed behind vegetation, Horstman noted that although the animal had a bounce as it walked, it appeared to be “floating on a boat” as it walked on the trail. Horstman immediately alerted McAndrews to the visual contact, but McAndrews never acquired the animal on his ATN scope mounted on the .30-06. The animal disappeared as quickly as it had shown up, apparently now concealed behind more vegetation. Horstman was hardly able to contain his excitement, but McAndrews had not been able to put his rifle scope on it. Specimen collection would have to wait for another time. (Adapted from Operation Relentless Juliet team after-action report from July 1, 2013, unpublished.)

Later that day, McAndrews and Horstman replicated the visual contact scenario for proper estimations of size and path of the animal:

11:11 – McAndrews went to the exact spot where Horstman observed the large white hot signature at 05:08. From inside the overwatch tent, Horstman used the handheld thermal to observe McAndrews. After seeing the five-foot-ten-inch McAndrews replicate the animal, Horstman was “100 percent certain” that he had observed a wood ape that was no less than seven feet tall and twice the width of McAndrews at the shoulders. (Adapted from Operation Relentless Juliet team after-action report from July 1, 2013, unpublished.)

Although not the closest visual contact or the most detailed, what follows could arguably be the most significant visual during the four-year study-period, having brought the NAWAC the closest to actually collecting a wood ape specimen. While Alton Higgins slept in his tent,

in the same location as described in previous after-action reports, Travis Lawrence and Robert Taylor provided overwatch from the nearby ground overwatch tent using thermal optics. Taylor acted as spotter with a handheld thermal optic; Lawrence had a Remington 7400 .30-06 equipped with a thermal scope. The following is adapted from their after-action report:

01:15 – Higgins retired for the night in his tent; Lawrence and Taylor commenced overwatch. Higgins heard a “clatter of large rocks” coming from the road to base camp from the west cabin, just west of his tent. Higgins assumed the sounds were produced by one of the team members, but the rest of the team was nowhere near the area (Lawrence and Taylor were in the overwatch tent; McClurkan was in the cabin).

01:15 to 03:50 – The overwatch team noted much activity. Lawrence said, “Not 15 minutes went by without us hearing something.” The most significant things were three wood knocks from the west, northeast, and south, and “heavy movement” along the mountain slope.

03:50 – Higgins awoke and purposely unzipped his tent loudly for effect. Viewing through the ATN thermal scope, Lawrence observed a huge white-hot signature of a creature as it stood up beyond Higgins’s tent in the southwest woods, revealing its body from the armpits to the top of its conical head. Lawrence saw an animal “that looked nothing like a human,” was huge, had a pointed head, enormous shoulders, and trapezius muscles that blended into the head, which appeared much lower than a human head relative to the deltoids. It was apparently covertly observing Higgins, who had no idea it was there no more than 7-8 yards away. Lawrence calmly put the reticle of the scope on where he believed the animal’s nose was located and sent the round (Figure 52). Higgins immediately lay down inside his tent. Shortly thereafter, Lawrence called out to Higgins and asked him to seek sanctuary in the base cabin. Higgins hurriedly went into the cabin and summoned McClurkan, who had slept through the entire event.

04:00 – With McClurkan now joining the other three men, they all began a search to find a body or blood. They found nothing. They determined that the animal had been approximately 30 yards away from the overwatch tent. The men believed it likely that the animal had been observing Higgins and the tent for hours

surreptitiously from its hidden position. Heavy rain earlier in the evening had made it possible to walk on the normally loud crunchy leaves in silence.

05:00 – The team turned in for sleep.

05:20 – Business as usual: A rock slammed the base camp cabin roof.

10:30 – The team arose and began the investigation of “the Kilo Incident.”

10:50 – Higgins found a hanging broken tree limb, slightly smaller in diameter than a pencil, that appeared to be in the flight path of Lawrence’s bullet. McClurkan examined the limb, returning it to its original position, and revealed an obvious “cup” notched out on top of the limb where the bullet struck (Figure 53). McClurkan then found a second limb, higher than the first that had been similarly struck. It seemed clear that the bullet had been deflected upwards and away from the face of the wood ape. The results would have been very different had the bullet traveled one-quarter of an inch lower.

In the aftermath of the Kilo Incident, Higgins recorded the following in the field journal:

The overwatch tent is about 52 feet from the cabin. The overwatch tent is about 10 feet square. It is set up to house a “spotter” (a team member employing a hand-held thermal viewer), and a “shooter” (armed with a 30/06 equipped with a thermal scope). The “snorer” sleeps in a small tent located 50 feet west-southwest from the overwatch tent. The bullet fired at the figure early Thursday morning hit a twig approximately 6’ 4” high, ten feet from the front of the 7-foot-wide tent. The bullet exit hole in the overwatch tent’s plastic bag wall was approximately 3’ 10” above ground level. The bullet rose 30 inches from the overwatch tent to the twig that deflected it, or about 0.448 inches per foot. Adding 8 inches to account from the distance from the nose area, where Lawrence aimed, to the top of the head (which I think is a very conservative guesstimate), and adding another four inches to account for the low spot where the subject stood, and adjusting for the continued rise of the bullet, produces estimates of the subject’s height of 7’ 10” to 8’ 2” (based on distance to subject approximations of 27 to 30 yards). Lawrence had McClurkan stand where the subject stood while he, Lawrence, observed from the overwatch tent. McClurkan is about 6’ 1” tall. Lawrence estimated the subject’s

height at 8' 7" based on this comparison. The observed and measured flight path of the bullet, including rise and distance to target, serve to corroborate Lawrence's account and his estimate regarding the size of the thermal image subject. Because the correction factors were believed by me to be conservative, it could very well be that the subject had a height of 8.5 feet or more. (Adapted from Operation Relentless Kilo team after-action report from July 11, 2013, unpublished.)

Another significant visual contact came the following year on June 3, 2014 as Shannon Graham and Shannon Mason hiked east of the base camp cabin. The following is adapted from their after-action report:

11:30 – Graham and Mason began hiking east through the meadow and then on the trail through the bottleneck area. Graham led; Mason was approximately five yards behind. The two were not being particularly quiet or stealthy. As Graham approached the area where the trail opens up, she observed a large, stooped, brownish-red figure dart across the trail in front of her from south to north toward the mountain slope, no more than 50 yards away. Graham noted that the animal made no detectable sound as it ran through the grass and disappeared near the tractor shed into the dense foliage. Graham was struck by the smoothness of the animal's movement. She said, "It seemed to glide..." She saw the sun light up the hair on it, projecting a "brownish-red" hue. Before she had time to react at all, the animal was out of sight. (Adapted from Operation Tenacity Charlie team after-action report from June 3, 2014, unpublished.)

On June 15, 2014, having hiked west outside the property gate and now heading east back toward the cabin, Alton Higgins documented a notable visual contact. The following is adapted from his team's after-action report:

18:32 – While returning to camp, hiking back east on the main trail, Higgins heard "three or four crashing sounds like running footsteps" ahead of him down the trail to the east. He then watched "a large brown-reddish figure dash across the trail, from north to south." (Higgins would later describe the subject as "upright," and no smaller than Travis Lawrence, who is 6 feet 3 inches tall and weighs approximately 250 pounds.)

Higgins rushed forward with his sidearm drawn in an effort to get another look at the creature. When he reached the spot where the large upright animal had crossed, Higgins squatted down. From his squatted position, facing to the south, Higgins briefly observed the animal again through the trees on the south side walking quickly, seemingly purposefully, to the east, paralleling the trail, at a distance of no more than 20-25 yards away. Higgins thought he saw two legs, but he could not be totally confident in that.

Higgins then heard a “loud commotion from the northeast,” behind him, causing him to briefly look in that direction, but he could see nothing through the thick vegetation. It then occurred to Higgins that the noise to the northeast was an attempt to intentionally divert his attention away from the animal he had just seen. Higgins did not pursue the big brown upright animal. He promptly returned to base camp and informed the others of what he had just seen and experienced. (Adapted from Operation Tenacity Echo team after-action report from June 15, 2014, unpublished.)

On July 19, 2014, another visual through a thermal optic occurred. Ken Helmer had suggested to his team that instead of conducting thermal sweeps from the stationary overwatch tower, the team should remain down on the ground, unconcealed and mobile, to allow for a more diverse and quicker reaction to events as they occurred. His suggestion had merit:

21:19 – Using a hollow log discovered by Foxtrot team to produce good quality wood knocks, Helmer produced three successive knocks on the hollow log.

21:25 – While Helmer was standing near the east shed (with no lights on), a rock “zipped through leaves” and hit the side of the cabin, loudly striking the wood, which created a sound similar to a wood knock.

Helmer took the .45-70/ATN thermal combo and went behind the cabin along with Alton Higgins. While there the men heard three rock clacks above them on the slope. Helmer could see no signs of wildlife up on the slope.

21:43 – Phil Burrows, Jeff Hammer, and Daryl Colyer took the giant green slingshot and began launching rocks up onto the slope behind the cabin.

22:20 – Helmer, J. Hammer, Burrows, and Colyer went up the slope behind the cabin with white lights on. When Burrows was about 15 yards above the pump station, a rock landed in front of him with a thud; it came from much higher up the slope.

When the men reached the first ledge, they noted that a small red inverter could be seen at the back of the cabin from up on the ledge. They discussed covering the light because they believed it helped the apes to zero in on the cabin from long distance at night. Covering it might impel the apes to move closer before launching rocks and thus might put them within visual contact range of OW.

22:40 – The men returned to the fire circle.

Almost immediately after the team had returned, they heard three quick metal bangs from the area of the west cabin.

22:41 – Colyer took the .45-70/ATN thermal combo and glassed down the trail to the southwest. He immediately caught a wildlife heat signature in the thermal scope. At first it appeared small, as though perhaps he was only seeing a small portion (of what turned out to be a large animal). He said calmly to the rest of the team, “I have a hot signature at the end of the southwest trail...” As Colyer spoke the signature became much larger and appeared to be a large biped in a squatted position. It roughly appeared like an unclothed man who was squatted down facing Colyer and his team from about 100 yards away at the southwest end of the trail. Just then, Burrows, standing beside Colyer, shot his bright white flashlight toward the animal. Immediately Colyer lost visual of the animal as it very quickly disappeared behind dense foliage to its left. Colyer admonished Burrows to extinguish the light, but it was too late. Whatever it was had fled very quickly once Burrows activated his bright white light. (Adapted from Operation Tenacity Juliet team after-action report from July 19, 2014, unpublished.)

On September 12, 2014, Daryl Colyer had two significant and interesting visual contacts that are worth providing here. After enduring over six inches of rain over the previous twenty-four hours, the team finally was able to get out of the cabin and move about. This resulted in significant contacts with the target species, and once again the NAWAC stood on

the edge of being able to provide a specimen for formal description. The following is adapted from the field report of Colyer and his teammates from that day, September 12, 2014:

16:25 – Colyer hiked slowly back to base camp. On the main trail in front of the west cabin he used the west cabin and a large tree to conceal himself from observation to the south. He felt certain there was one or even two apes to the south of the west cabin watching him. He believed that by stopping behind the tree in front of the west cabin, he might confuse any apes that watched him as he hiked.

He knew also that it would be difficult to track him once he put the west cabin between him and any observers to the south. He used the west cabin to conceal his movement behind the tree. He hid behind the tree for a few minutes and then he slowly peered around the tree looking back to the southeast corner of the west cabin's fenced area. He slowly sidestepped east and then observed, back behind the southeast corner of the fenced area of the west cabin perhaps 50 yards away, what appeared to be a light- or honey-colored "dome-shaped" head—its hair clearly visible and sticking up—as the animal faced Colyer and appeared to be looking directly at him. Colyer slowly began raising his rifle and the head slowly lowered below the ridge behind the cabin. At no time had Colyer seen a body or appendages. He had seen only the head as it appeared to be intently watching Colyer, with its body perhaps concealed behind terrain or vegetation.

16:40 – Colyer promptly returned to the cabin and told the others of what he had seen. Colyer then took Brian Brown, Daniel Falconer, and Bob Strain to the site. Brown stood in for the animal and determined that the animal had been observing Colyer from the area behind the fence where the terrain sharply dropped down to a ravine. It must have escaped or hid using the lower terrain after Colyer detected it. The ape's head, in Colyer's estimation, was "25 percent" larger than Brown's head.

17:05 – Colyer found a spot near where he had seen the head, by a large downed tree to the immediate south of the west cabin, perhaps 15 feet from the fence, and planted on the ground leaning against the downed tree immediately on his right. Because the spot was down in the ravine behind the cabin, it would also allow him to recline as needed against the angled terrain to his back. The spot provided concealment protection for his rear, the large downed tree made it very difficult to see him from the west, and a prominent berm to the southeast made his detection from the

southeast all but impossible unless something scaled the berm. Conversely, Colyer had good visibility to the east, south, southwest, and west. His visibility to the southeast was obscured by the berm and dense vegetation. It was, in Colyer's judgment, an excellent position for an ambush.

The rest of the team returned to the base camp cabin, leaving Colyer in place.

17:15 – A wood knock rang out to the west of the base camp cabin.

17:35 – The Strains, Brown, and Falconer hiked west down the main trail to divert any attention away from Colyer's position and to try to lure an ape into Colyer's fields of view.

18:10 – Colyer heard significant movement at close range to the southeast behind the berm. He heard and saw vegetation and tree limbs moving just on the other side of the berm, perhaps 20 yards away, but he could not make out anything else. The movement sounds and the movement of the vegetation put him on high alert. He put his weapon into a position where he could quickly raise it and fire it in that direction. He also kept scanning over to the southwest and west.

18:35 – While Brown and the Strains were inside the cabin and Falconer remained out on the porch, a rock very loudly struck the back of the cabin. Falconer quickly looked up the slope behind the west shed. His attention was “drawn to a dark patch beneath some overhanging leaves immediately north of the cabin” from near the first ledge area. Falconer believed he had seen a large animal retreating or “hunkering down.” K. Strain emerged from the cabin with a thermal scope. The team scanned the mountainside but they were unable to detect anything of significance.

18:45 – The team at base camp had chow.

Colyer remained in place. He continued to keenly observe all around him, using very slow and deliberate movement so as not to reveal his position.

19:10 – The team at base camp heard a wood knock from the bottleneck area. Brown saw movement and identified two white-tailed deer does (*O. virginianus*).

19:20 – Colyer still remained in place. The sun was setting and he debated about how much longer he would remain. He looked through his Aimpoint CompM3 red dot scope and now that it was getting darker he decided to “dial down” the dot to a smaller size and lower intensity than he had been using during full daylight. After he clicked the red dot down to a smaller dot, he turned slowly to look southwest. At that time, he observed a very large “brown mass” much the size and rough shape of a door frame, but with rounded upper corners (shoulders), enter into a narrow opening in the trees, perhaps 60 yards away.

While simultaneously taking his weapon off safe, he quickly moved his rifle to a position over the log so that he could get a shot at what he knew was an ape standing in the narrow clearing. As soon as Colyer raised his rifle over the log, the animal very quickly bolted to the north into the trees and out of sight; it must have seen the abrupt movement of Colyer's rifle as he raised it above the log to get a shot.

Colyer then saw a second large upright figure—really just a brown, large, upright, tall blur, but taller than the first—streak across the opening behind the first one. The second one was gone as quickly as it had appeared. Colyer was stupefied. He could hear both animals crashing through the vegetation as they seemingly attempted to flank him and move around him to the north. Colyer hurriedly got up and began trying to beat them to the trail. As he moved he could hear their movement off to his left in the trees. As he stepped out onto the trail, he hurriedly looked west to see if he could see them cross to the north. He saw nothing. At that time, a wood knock erupted from the area where he been posted. The wood knock unnerved Colyer because judging from the sound of it, it had come from very close to where he had been posted. Had another ape been just on the other side of the berm from him? Colyer moved quickly back to base camp to tell the others what had happened. (Adapted from Operation Tenacity Quebec team after-action report from September 12, 2014, unpublished.)

Small Apes?

During the course of the Ouachita Project, NAWAC researchers had a number of visual contacts with small chimp-like animals, leading them teams to hypothesize that team members had encountered small juvenile wood apes.

On May 14, 2012, Bob and Kathy Strain, Brian Brown, and Mark McClurkan observed a small ape with a large one as the animals hurriedly escaped up the mountain (this incident is provided in the Visual Contacts section).

Kathy Strain and Brian Brown believed they may have seen a small ape the next year.

11:00 – While Brown, K. Strain, and Rawlins were sitting on the east porch, Strain observed a limb bouncing up and down up in the bottleneck area. She then observed “an animal bigger than a cat but smaller than a large dog” leap from the end of a branch to another tree. The animal was “dark brown” and had no tail. (Adapted from Operation Relentless Foxtrot team after-action report from June 6, 2013, unpublished.)

Later that same afternoon, Brown saw, in the same area, what may have been the same small brown animal again moving among the tree tops (B. Brown, personal communication, February 4, 2015).

Later that year, Jordan Horstman had a visual of a small, black animal that he described as very much resembling a “baby gorilla”:

08:45 – The men ceased overwatch activities and emerged from the overwatch tent. Colyer greeted them and they began to apprise him of their observations during overwatch.

09:00 – As Colyer debriefed Horstman and McAndrews, with the men standing in front of the base camp cabin slightly to the west side, Horstman turned toward the west woods, pointed, and excitedly exclaimed: “Something’s moving that tree!” McAndrews and Colyer looked to the west woods behind the west shed and saw a small, thin tree shaking dramatically. Horstman stood there pointing. The tree was perhaps 20 feet from the men behind the west shed just inside the west woods. Colyer very quickly headed directly for the moving tree. He was at the tree very quickly but he did not see what had caused the tree to shake. McAndrews went around the west woods to try to intercept the tree-shaker. The men made no visual contact.

Horstman, on the other hand, had seen in the tree a small, black animal hanging by one long arm from a tree limb before it dropped and embraced the tree with both

arms to rapidly climb down. It happened very quickly and only Horstman saw the animal. The animal was about the size of a 50-pound bag of feed, was “totally black,” and apparently had long arms.

By the time Colyer and McAndrews could get to the area to investigate the small animal had completely escaped without a trace. (Adapted from Operation Relentless Juliet team after-action report from June 30, 2013, unpublished.)

Horstman later provided a few more details of what he saw that morning and some rough sketches:

Early in the morning after a night of overwatch, Brad and I met Daryl outside the cabin to debrief about the preceding nights' events. As we spoke I noticed a disturbance in the top of a tree, but at first thought it must be a large squirrel or a few squirrels causing the movement in the branches. It was then that I noticed the tree top was moving much more deliberately than the strength of a squirrel could have caused. (It was shaking back and forth.) I then saw a black fur covered mass. It was just a big ball at first glance.

I then saw a thin arm emerge from the ball and reach for a branch. I said out loud "Look! Something's moving in that tree... What is that? What is that?" Daryl and Brad saw the branches shaking in the tree and they began moving to investigate it. (Figure 54.)

Whether by coincidence or because it was startled by our surprise/noise it immediately released its arm on the left and swung with its weight on what must have been its right arm which was now visible. (Figure 55.)

It then immediately released its grip on the tree and fell a short distance (1.5-2 feet?) before again grasping the tree, this time with both arms (Figure 56) and very quickly descending the tree and out of sight. It did not appear at any time to have a tail. At the time I said had I not known where it was I would have thought it was a small chimp; after I got home the best thing I could find that looked like it was a baby gorilla. I am certain it was not a black bear cub or a raccoon. (J. Horstman, personal communications, July 3, 2014, and February 5, 2015.)

During the late spring of 2014, Alton Higgins observed a small chimp-like animal that scampered away from the vicinity of a large tree that had just fallen:

17:59 – The team heard a “LOUD falling limb (tree?) crash” from the northeast up on the mountain slope. Hestand and Lawrence went to investigate while Higgins scanned the hillside east with binoculars. While glassing the slope, Higgins fleetingly “observed a smallish black figure quickly moving from east to west and angled slightly downhill.” Higgins saw the black animal run off quadrupedally, “like a chimp,” with seemingly longer arms than legs. Higgins did not believe he had seen a bear. (Adapted from Operation Tenacity Echo team after-action report from June 15, 2014, unpublished.)

Almost a month later, in roughly the same area, Dave Cotter observed a similar animal:

18:00 – While standing in front of the east shed at the base camp cabin and looking up on the slope to the northeast, Cotter briefly observed an odd animal that perplexed him. The animal was uniformly “reddish brown” and it was moving from east to west in and among some large downed trees. Cotter noted that the animal’s color was similar to that of an Irish Setter; its hair was at least two inches in length, and was wavy, like some dog species of retrievers and spaniels.

Cotter “clearly saw it” as the animal passed quietly and quickly through the sunlight behind a large log. The animal “was clearly walking on all four feet or limbs.” Cotter made note that he could not see “legs, a tail or a head.” Its legs were apparently obscured from visual detection by the log behind which the animal was moving. Cotter could very clearly see the top six inches of the animal’s horizontal length as it moved westward. Its back was flat and approximately three feet in length. Cotter noted that this animal was much thicker and heavier than any of the resident foxes and raccoons, and it did not appear to be a deer or bear.

(Cotter had seen many black bears [*Ursus americanus*] during his life and he had seen one at very close range just a week prior near his home in New Hampshire as it crossed the highway in front of him; not to mention that he had recently seen one in his yard.)

Cotter recalled observing the animal’s “front shoulders working under the fur [or hair] as well as the hips at the hind end...There was no tail.” Cotter was struck by the lack of a visible head. Where the head should have been, Cotter could only see “a

severely downward sloping neck and/or back of a head.” Cotter wrote: “It was as if the animal had its nose to the ground or had tucked its head under itself in such a way as to rest its chin on its chest.” Was the head purposely down to avoid detection from below? Was this an ape crawling on all fours? Unknown.

Cotter had observed the animal purely by happenstance. He had simply looked up and there the animal was. Nothing in particular had drawn his attention. The duration of the sighting was approximately two seconds. Cotter was certain that the animal was not a fox, raccoon, deer, bear, canid, or felid. (adapted from Operation Tenacity India team after-action report from July 14, 2014, unpublished.)

12:40 – Higgins headed back to the creek for more wash water. Higgins wrote: “It’s not getting any cooler, and my socks aren’t smelling any better.”

13:05 – Just before Higgins reached the gate, up on the slope of the mountain to his right, he observed an animal of “unusual color, a dark reddish-black mixture.” Higgins thought the animal must have been in “good light because the red seemed bright.” The animal seemed to be “roughly raccoon sized,” and Higgins could not discern a head or tail. The strange animal turned and silently crawled away in what seemed “an unusual manner.” Higgins climbed up the slope “probably further than good sense dictated,” hoping to get another glimpse of the animal, but he was unsuccessful. (Adapted from Operation Tenacity Lima team after-action report from August 5, 2014, unpublished.)

15:15 – While Travis Lawrence and Gene Bass were hiking in an area about 75 yards south of the east cabin specifically looking for wood knocking sign, Lawrence thought he heard a very subtle “huff” a short distance to his east, which caused him to pause and stare at the woods to his east for about 10 seconds. Seconds later, he heard what sounded like an animal sliding down a tree to the ground. Lawrence then snapped back around to the east and observed a “small dark-colored animal” moving through the underbrush. When he first saw the animal, Lawrence thought it was a raccoon (*Procyon lotor*). Lawrence then called out to Bass, saying, “Look at that!” As this was happening, Lawrence noticed that there was more than one animal moving through the brush and caught one of them visually as it moved through a patch of sunlight. In the sunlight, Lawrence could see that the color was a “very dark red.” Lawrence, initially and for a very brief period, thought the animals were small hogs (*Sus Scrofa*),

which he later admitted in hindsight "did not make much sense"; however, upon seeing an animal this color, the only species of animal with which his brain could identify was wild hog. At this time, Bass also observed one of the animals as it moved through a small opening in the brush. He described it as a "brownish red" but was not able to see the animal with much detail as it was heavily obscured by the brush. Lawrence could tell the animals were moving east up a mostly dry creek bed, so he took a step to his right to see up the open lane. Lawrence was surprised to observe "four, small, hair-covered animals" that "looked just like small chimps" moving quadrupedally—in the manner of chimps—briskly and in a straight line perhaps two feet apart, one right after the other. The animals moved rapidly up the creek and were gone within a second of Lawrence realizing what they were. Lawrence and Bass immediately pursued up the creek, stunned.

Estimating their weight at no more than "30 to 40 pounds," and their quadrupedal height at no more than two feet, Lawrence noted that the animals' upper bodies were longer and wider than their lower bodies and they seemed to run with heads down. Lawrence emphatically compared the four animals' sizes and movement with chimpanzees (*P. troglodytes*). Bass saw the last animal in line briefly. Lawrence described the animals' color as "reddish-black" and resembling the color he had recently seen in a fisher (*Martes pennanti*) in Vermont. Bass described the one animal he saw as "dark reddish-brown." The visual encounter had lasted perhaps five seconds for Lawrence; much less for Bass. In hindsight, Lawrence believed the subtle "huff" he had heard may well have come from an adult ape, possibly as a message to four young apes in a tree to leave. The animals indeed fled.

After the men lost sight of the animals, Lawrence first attempted to find wet footprints on the rocks for verification of what he and Bass had just observed, but he was unable to do so. The men continued for about 500 yards in the direction the small animals were last seen moving, but they never found anything else of interest.

16:50 – Bass and Lawrence returned to camp after the four small mystery animals successfully eluded them. (Adapted from Operation Tenacity Mike team after-action report from August 11, 2014, unpublished.)

Hannah Altom reported seeing a small primate in a tree to the east of camp:

18:14 – Rick Hayes, Phil Burrows, Laura Altom, and Hannah Altom hiked east away from camp. L. Altom waded in the cool water, noting how healthy the stream appeared, as it teemed with life: “assorted minnows and crawfish.”

18:40 – While trekking back to base camp, H. Altom spotted a flash of movement in the treetops. She described seeing an animal that was “dark” in color, perhaps “30 pounds” in weight, and resembled a monkey, as it apparently leapt from one limb to another; she thought she had seen a juvenile wood ape. Hayes and Burrows attempted to investigate, but they did not observe anything further. (Adapted from Operation Tenacity November team after-action report from August 16, 2014, unpublished.)

Surveillance System and Cameras

After the five-year camera-trap project, Operation Forest Vigil, yielded no photographs or videos of the target species, the NAWAC was not exactly eager to continue its reliance on infrared cameras going into the Ouachita Project’s first year. Still, even as the teams pursued a more assertive approach toward conclusively documenting the wood ape, they continued to employ camera traps in the hope that photo-captures might still be obtained:

16:00 – Mayes and Colyer deployed eight cabin sentry cameras throughout the human encampment area. The cameras were four Reconyx Rapidfire cameras—three RC-55s and one RC-60—and four Reconyx Hyperfires. (Adapted from Operation Endurance after-action report from June 5, 2011, unpublished.)

Using the cameras as tools to augment a more active assertive approach, the teams quickly learned that cameras did not exactly perform as hoped or expected. Michael Mayes, Daryl Colyer, Tod Pinkerton, and Travis Lawrence found out firsthand in the first week of Operation Endurance in 2011 that camera traps did not always cooperate even in the most certain of circumstances. The following is adapted from their after-action report:

09:00 – The team arose and had breakfast. After eating, Pinkerton, Mayes, and Colyer spent the better part of the day performing camera trap maintenance on the cameras deployed as part of Operation Forest Vigil. Lawrence deployed a camouflaged blind to the east of the cabin area and spent much of the day deployed in the blind. The three checked all previously placed cameras except for the two Cuddeback cameras—XC1 and XC2—well to the east of the human encampment area.

19:30 – Mayes used his laptop computer to review the hundreds of photos that had been captured by the Operation Forest Vigil camera traps.

20:55 – Colyer, Mayes, and Pinkerton recorded that they heard a white-tailed deer doe (*Odocoileus virginianus*) blowing several times to the east of Colyer's and Mayes's cabin. Shortly thereafter, Mayes and Pinkerton saw a young fawn bolt out of the woods near the creek, crossing the trail into the creek.

21:00 – Lawrence now with them, the four men observed a black bear (*Ursus americanus*) after it emerged from the woods in the exact same location from which the fawn had emerged just a few minutes before. The men estimated the weight of the bear at 250-300 pounds. The bear was approximately thirty-five feet away. The men surmised that the bear was in pursuit of the white-tailed deer fawn. The bear sniffed the air for a minute or so before it noticed the team standing on the porch of the cabin. The bear froze momentarily and looked at the men. With the porch gate wide open, the men had their firearms trained on the bear in preparation for the worst-case scenario. The bear resumed sniffing the ground and the air for another minute or so before sauntering off down the trail toward the east. The bear seemed completely indifferent to the presence of the men. It seemed apparent that it had never been in contact with humans before. The entire event lasted two to three minutes. [The bear had ambled right into a triangular array of Reconyx cameras: One Reconyx RC60 and two Reconyx HC600 Hyperfires; however, the team pulled the cards from the cameras the next day and was very disappointed to find that the black bear had somehow escaped detection by the cameras.] (Adapted from Operation Endurance Alpha team after-action report from June 7, 2011, unpublished.)

The next year, the teams again noted more camera trap failures. As Rick Hayes and Daryl Colyer sat inside the cabin discussing camera locations and making plans for the week, they heard, just outside the east window on the east side of the cabin, heavy bipedal jogging right by where they had placed a Reconyx RC55 camera:

21:10 – Colyer and Hayes entered the cabin to discuss and record the GPS coordinates of the Plotwatcher cameras.

21:22 – Colyer and Hayes heard extremely loud crashing multiple impact sounds. The men were a bit unnerved because the sound was very loud and sounded as though “something had thrown a Volkswagen.” The men clearly heard the extremely loud impact sounds while inside the cabin. The men could not agree on where the sounds originated.

21:45 – With Hayes sitting in a chair near the bunk beds, and Colyer sitting in a chair near the west bedroom, both men heard loud, bipedal, jogging footsteps to the east of the cabin. The men believed the thudding footfalls came from the area between the shed just east of the cabin to the outhouse east of the cabin. They were hopeful the Reconyx camera on the tree just outside the east window captured images of what surely ran right in front of it (Adapted from Operation Persistence Alpha team after-action report from May 6, 2012, unpublished.)

The next day, the men checked the cameras around the cabin:

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10:40 – Colyer reviewed the memory cards from the Reconyx cameras surrounding the cabin. Nothing of interest was photo-captured. (Adapted from Operation Persistence Alpha team after-action report from May 7, 2012, unpublished.)

The teams even attempted the deployment and use—without success—of time-lapse Plotwatcher cameras that triggered during daylight hours automatically every one, three, or five seconds:

12:20 – The team began installation of the Plotwatcher time-lapse camera trap array. While Colyer scouted ahead, Diaz and Buntentah installed cameras as Hayes logged the GPS coordinates. (Adapted from Operation Persistence Alpha team after-action report from May 6, 2012.)

The placement of the Plotwatchers was an excellent move; however, obtaining photo-captures would prove to be exceedingly difficult. Even after Colyer had a quick but clear visual of a large gray wood ape in the area where he and his teammates had deployed the Plotwatcher array, the camera trap coverage had some gaps, and the time-lapse mode, which

had been set to three seconds—carefully chosen to extend the amount of days of battery life—was simply too slow to photo-capture the animal:

18:30 – Hayes removed the cards from Plotwatcher 1 and 2 to see if either of the cameras recorded the animal.

19:00 – Colyer and Hayes returned to base camp. The team reviewed the camera cards. No photos of interest were captured. (Adapted from Operation Persistence Alpha team after-action report from May 10, 2012.)

If team members had been repeatedly disappointed by the failure of the best game cameras commercially available to secure photos or video, there was a buzz of excitement among members for the procurement and installation of an infrared surveillance system at the cabin. Hopes were high that photos would be obtained of the target species during close approaches to the cabin; however, some in the organization wondered whether or not the surveillance system would actually work as it was designed to do, given the history of infrared camera traps.

The team purchased a robust custom surveillance system from Rugged Cams in Kemp, Texas. The NAWAC installed the system two weeks prior to launching the third year of the Ouachita Project. Very soon after the teams began running the system over night, internal debates commenced about whether or not the cameras had negatively affected approach behavior because all close approach activity seemed to cease when the surveillance system was activated. Night photos reveal that the surveillance system cameras in IR mode were not nearly as covert as one might think (Figure 57). After running the system for about 10 consecutive weeks, teams began using it less frequently and finally chose to not use it all by the end of the field season of 2013. After 2013, the system was removed from the cabin and sold.

Discussion

Specimen Collection

For the wood ape, there is an entire litany of questions to which science understandably demands answers, but before any questions about population densities, habitat requirements, behavioral characteristics, or genetic lineage can be pursued, the foremost issue that must first be resolved is this: Does the species exist? Despite the NAWAC's demanding and determined efforts over the last decade in the Ouachita Mountain Ecoregion, the case for the wood ape's recognition as a legitimate North American species of primate falls well short of what is needed by science and government, a fact that is not lost on the NAWAC. Accordingly, the NAWAC's approach to definitely resolving the wood ape question is derived simply from the traditional requirements of taxonomical canons; that is to say, the NAWAC shares commonality with the late anthropologist Grover Krantz:

Science requires solid evidence for the existence of a new species—footprints and sightings by local people are never enough. A “type specimen” must be obtained, which is then described in a scientific journal and continues to be available for other experts to examine. For modern mammals this normally consists of a skin and skull that show distinctions from all similar specimens. For fossils it consists of skeletal material that is clearly distinct from what appear to be its closest relatives. Nothing of the kind has been recovered for the sasquatch; therefore it does not exist in the eyes of science.

Actually the rules of evidence vary somewhat, depending on the nature of the animal whose existence is proposed. The more unusual and/or unexpected it is, the more proof is required to establish its existence. A new subspecies of chipmunk or sparrow might be provisionally accepted on the basis of clear observations by one or two competent biologists. For a higher taxonomic level, that of a new species, a specimen is normally required no matter who saw it. (1999, pp. 3-4).

Indeed, long before the NAWAC was ever conceptualized, Krantz advocated active efforts to collect a specimen, and he actually made several attempts at it: “The easiest way that a sasquatch can be encountered, where a hunter might take it, is while driving along a back road at night...I have tried this for about seven or eight nights, on three separate occasions; many animals were seen, but no sasquatch” (1999, p. 259). Other anthropologists know the demands of zoological taxonomy conventions, including Jeff Meldrum: “...a type is required,

and that needs to be a body or diagnostically significant portion of a body..." (Texas Bigfoot Conference Panel Q&A, 2013); and David Daegling: "The issue cannot be resolved without a type specimen," (2004, p. 16).

Although the NAWAC's methods and approach may seem outdated and unwarranted to some who lack a fundamental understanding of scientific protocol and how specimen collections contribute to the progress of science and natural history, in truth they are in keeping with well-established and current principles of wildlife specimen collection and the essential steps required for formal description and conservation. Like it or not, killing wildlife is a "necessary evil" for natural history, enabling scientists to address "broader questions about ecology and evolution" (Wheeler, 2014; Suarez & Tsutsui, 2004).

Krantz argued that protection of the species and its habitat is not possible without first obtaining a body or body part: "Proper scientific study and possible protection will occur only when a type specimen is obtained" (1999, p. 256). Primatologist Ian Redmond, in agreement with Krantz before him, knows that one step cannot happen without the other; that is, conservation of the species and its habitat simply is not possible until it is first formally described. Only then can studies of population viability and habitat requirements begin:

Before the formal description of gorilla there were travelers' tales and native legends, and the people in their armchairs would say, "Harumph, don't believe a word of it!" And then a specimen arrived. Well, we haven't gotten a bigfoot specimen yet, but maybe time will tell...as well as documenting the reports, trying to get a formal description of the species, we also need to have in our minds its conservation and the protection of its habitat...But, of course, authorities are not going to do that until you have a formal description. (I. Redmond, TV news segment interview, Channel 7, Tyler, Texas, <https://www.youtube.com/watch?v=ldybV5eEliA#t=60>).

NAWAC Chairman Alton Higgins has firsthand knowledge of the value of specimen collection and knows well the circumstances under which it is warranted. As a field biologist for the State of Arizona, he participated in numerous surveys during which he and his fellow biologists collected "literally hundreds" of birds and small mammals for a variety of purposes, such as establishing habitat preferences, determining dietary requirements and habits, ascertaining breeding seasons, documenting range extensions, etc. (A. Higgins, personal communication, February 18, 2015)

National Wildlife Federation naturalist and spokesperson David Mizejewski agrees with Higgins and the NAWAC approach:

Your goal is the correct one. I think the only way that you are going to establish that this is a real animal and then, therefore, do what needs to happen to protect it, to protect its habitat, is to get a specimen. There's just, I totally agree that there really is nothing else, especially at this stage of the game. You know, a sighting story is not going to do it. A footprint cast is not going to do it. A photo, a video, whatever, it's not going to be definitive enough, or you can't rule out one hundred percent that it's not a fake or a misidentification. (Brown, 2014, 23:48).

Some have contended that collecting a type specimen from a critically endangered species could hasten the demise of the species. However, according to Frank-Thorsten Krell, of the Denver Museum of Nature and Science, and Quentin Wheeler, founder of the International Institute for Species Exploration and current President of State University of New York College of Environmental Science and Forestry, "If the killing of a single individual increases the extinction risk of a species, then it is well below viable population size and already among the 'walking dead'" (2014, p. 815). Gary Casper, a wildlife biologist of the University of Wisconsin argued that "...it is not science if it cannot be independently verified. Collecting voucher specimens is necessary for that. Moreover, if a population cannot sustain the loss of a few individuals for vouchers, then it is doomed anyway...conservation is always about habitat, not individuals" (2012).

The North American wood ape remains a purely hypothetical species at this point—and to most scientists merely a mythical one—so questions of whether or not the species is actually endangered, how many there are, whether or not there are other "Area Xs" in North America, whether or not the species requires expansive stands of old growth forest, how much or how little forest fragmentation affects it, how much the species affects the trophic levels of the ecosystems in which it resides, or just what its habitat requirements are, without a formal description, are premature and impossible to even begin to understand. There is no way to know that "they're doing just fine on their own" without first having the species recognized. The species will not be recognized without a type specimen. Barring some unforeseen event, a type specimen will not be produced unless someone has the fortitude and persistence to do it.

Some may object to killing a wood ape for formal description on the basis of ethics; however, there is a strong case to be made that it would be unethical *not* to collect a type specimen for purposes of official description. Indeed, that precise argument has been advanced by Trond Amundsen, a biologist at the Norwegian University of Science and Technology: “[It is] unethical NOT to collect/kill for the purpose of describing and archiving...” (2012). Krell and Wheeler have argued similarly regarding specimen collection, stating that, “Describing a new species without depositing a holotype when a specimen can be preserved borders on taxonomic malpractice. Even given good photographs and a tissue sample, there are reasons to collect one or more complete specimens,” (2014, p. 815). So, proceeding on the argument put forth by Krell and Wheeler, even if the NAWAC produced photographs and tissue samples for a novel species, the necessity of collecting a type specimen would remain.

There is no argument on the matter from John Green, journalist, investigator, author of *Sasquatch: The Apes Among Us*, and one of the first in the modern era to seriously probe the wood ape question. Green did not mince words on the matter:

The appropriate action under the circumstances is to collect a sasquatch and get on with the study. Since no scientific institution is attempting to do so, it is perfectly reasonable for some private individual with a gun to get the ball rolling...the man who first succeeds in killing a sasquatch and bringing some part of it back for identification will be doing the right thing...the person who finds himself in a position to obtain a specimen should do so...” (1978, pp. 466-467).

Green’s position is reinforced by the pronouncements of scientists such as Luiz Rocha of the California Academy of Sciences, who along with over 120 of his academic colleagues from 60 universities and other institutions, argued against the thesis of a paper released in 2014 by B. A. Minter et al. calling into question the necessity of specimen collection, suggesting that scientists should instead rely on “alternative methods of documentation, including high-resolution photography, audio recording, and nonlethal sampling.” Rocha and his colleagues had a strong response:

Because an estimated 86% of species on the planet remain unknown, our goal should be to document biodiversity as rigorously as possible through carefully planned collections so that it can be effectively preserved and understood. Specimens from such collections and their associated data are essential for making informed decisions about management and conservation now and in the future. The arguments of

Minteer et al. erroneously portray the critical importance of scientific collecting in a negative light and distract from the primary causes of modern extinction: habitat degradation and loss, unsustainable harvesting, and invasive species. It is important to distinguish protecting the lives of individuals from conserving populations and species. Individuals are lost every day to predation, natural death, and anthropogenic factors, hence it is the populations we try to save. (2014, pp. 814-815).

Rocha had more to say in a separate interview:

A few representatives taken for scientific collections is a drop in the bucket compared to the many other threats that species face today. Photographs and audio recordings...can't be used to understand how a species and its ecology, distribution, and population dynamics have changed over time, or how individuals vary from one part of the species' range to another. (Maynard, 2014)

Valerio Sbordoni, a biologist of the University of Rome Tor Vergata, also weighed in on the issue: "Specimen collections are not only useful, yet necessary to the progress of natural sciences, and represent an invaluable source of information to understand the tempo and mode of biodiversity change" (2012). His statements correspond with the Animal Ethics Review Panel, which states: "If an animal is thought to represent a new species, a specimen should be taken" (n.d.), and with the Natural History Museum of London, which has issued the following statement: "Type specimens are of great value as they are the unique representative of a species and the first specimen to earn the species name. Whenever the species comes under review, scientists will refer to the type for answers" (<http://www.nhm.ac.uk/nature-online/collections-at-the-museum/intro-to-our-collections/index.html>).

With the rate at which habitat degradation and loss is occurring, the NAWAC's position—established firmly in line with current standards for zoological description—is that it is unethical not to act with a sense of urgency on this matter. If a higher-order primate exists in the Ouachita Mountain Ecoregion—and the NAWAC's Anthropoid Hypothesis, reinforced by field work of the last four years, suggests that it does—then there is a great ethical obligation to move with a sense of focus, purpose, and intent in having the North American wood ape species formally described so that the work of conservation, protection, and formal study can begin sooner rather than, perhaps, far too much later, when the species is too far

gone to save. A type specimen is required in order to open the door to that exciting new beginning.

Frequency of Visual Contact

Some may wonder why the NAWAC has not already obtained a specimen, or at least a photo or video, given the number of claimed visual contacts made with the target species over the last four years. It is a reasonable question for the person on the outside looking in; however, it should be stressed that the typical observation reported by NAWAC researchers lasted perhaps two seconds on average. A few lasted longer than that, but they were the exceptions.

There is more to consider. In truth, when the tally of wood ape sightings relative to time spent on site is put into proper perspective, it becomes apparent that visual contacts were quite exceptional. Arguably, the NAWAC was only able to increase its odds, ever so slightly, by simply maintaining a persistent presence for extended periods of time while employing certain tactics designed to both elicit contact and increase the likelihood of visual detection.

Over the 4-year period from 2011 to 2014, NAWAC teams and observers collectively spent approximately 12,000 total hours on site, including ad hoc trips made before and after the spring-summer field season. This figure was calculated using the number of days and nights that teams were physically on site. During those 12,000 hours, participants documented physical observations of the target species—hard visual contacts generally lasting 2 seconds or less—a total of 49 times. This total does not include many “possible” visual contacts (where indeterminate parts of large unidentified animals were observed).

12,000 hours/49 visuals = 245 hours between each visual contact (or one sighting every 10.2 days).

So, on average, the NAWAC documented a physical observation of the target species every 10.2 days, while employing teams typically made up of 4 persons, on site around the clock. On most occasions, lone individuals, not multiple members simultaneously, made visual contact. Therefore, generally speaking, 1 person out of a team of 4 might experience a 2-second visual contact, if the team remained on location for 10.2 days.

Alternatively, looked at in terms of individuals, and based on the average 4-person team, the NAWAC invested approximately 48,000 man-hours in the project over the 4-year period.

This translates to 980 hours per visual contact, or 40.8 days per person, per visual contact. Thus, on average, it took one individual six weeks to have one visual contact:

48,000 man-hours/49 visuals = 980 hours between each visual contact (or every 40.8 days) per individual.

So, based on documented NAWAC sightings of wood apes as recorded during the Ouachita Project, if a person were to stay in the NAWAC's Area X for over six weeks, remaining as vigilant as possible around the clock, using the methods of the NAWAC, he or she could reasonably expect to document a single visual contact, lasting approximately one to two seconds, during that time. Travis Lawrence's statement describing this anthropoid species as "perfectly elusive" is actually not far off the mark.

Camera Trap Avoidance

At present, there simply are no concrete answers for why the NAWAC failed to get photos or video of the target species, not only over the duration of the five-year camera-trap project *Operation Forest Vigil*, but over the course of the four years of the Ouachita Project, during which time the NAWAC continued to deploy game cameras, albeit on a more limited basis. Although photos and video would not compel a formal description of the species, they would still hold value at least internally for the NAWAC. Nevertheless, the observations of the NAWAC going back to 2006 suggest that the species may cognitively avoid camera traps. Some possible reasons will be explored here.

Some in the NAWAC have posed the question of whether it is possible for the species to see "further" into the near-infrared (IR) spectrum than humans, thus causing the species to be aware and circumspect of IR-emitting camera traps and the NAWAC's infrared surveillance system. Given the disappointing results of camera traps and the surveillance system for the NAWAC, it is not unreasonable to explore that possibility, despite there being no precedent for this among anthropoids. The rationale behind this is derived in part from the following:

- Passive camera traps actively "flash" high-powered IR emitters. These "flashes" of IR light can be visually (and easily) detected by the naked human eye.
- Active IR video cameras continuously emit IR light from a high-powered IR emitter. This continuous emission of IR light can also be visually (and easily) seen by the naked human eye.

The idea that the species may be able to visualize, and therefore avoid, light-emitting camera traps was not, at first, a topic of serious consideration, primarily because other possibilities in nature were thought to be more likely. One seemingly obvious postulate was that the motion-sensitive camera traps were producing sounds at a frequency and volume detectable by wildlife. To test this hypothesis, the NAWAC reached out to Martin L. Lenhardt, Ph.D., at the Bioacoustics Lab at Virginia Commonwealth University in Richmond, Virginia. The focus of the testing was to determine whether or not the cameras produce detectable audio emissions potentially capable of deterring wildlife. The results were rather conclusive in that the NAWAC's motion-sensitive IR-emitting camera traps did not produce any detectable levels of audio (Strain, Colyer, & Higgins, 2013).

When evaluated to a logical conclusion, the idea that wood apes may see in the near-IR is problematic, stemming from the physics/physiology behind eyesight, and the eye anatomy of the known great apes. However, wood ape eye anatomy may differ from the known great apes: NAWAC members have reported observations to the effect that this species appears to have eyes possessing a degree of light reflectivity, a characteristic not found in the known great apes. Such reflectivity would seem to suggest that wood ape ocular anatomy parallels structural characteristics found in other species of wildlife known to possess superior vision in low-light conditions. Central to such visual acuity is the presence of a tapetum lucidum and a higher ratio of rods to cones in the retina (Ollivier et al., 2004; Manning & Brainard, 2008). These structures work in concert to enhance photon signals received by the retina before transferring the signals across the optic nerve.

Given the NAWAC's observations regarding reflectivity and observations that the wood ape maneuvers and performs certain tasks exceptionally well in low light conditions, it is reasonable to suggest that the species possesses an eye anatomy and low light visual acuity that is congruous to that of a nocturnal animal. If true, this would also suggest that trichromatic color vision, a common trait of the old world monkeys, apes, and humans (Jacobs, 1996), may be unavailable to this animal. However, recent research indicates that primates thought to be largely diurnal—strict diurnality is thought to be the norm for all anthropoids with the exception of owl monkeys—were in fact active nocturnally as well, thereby indicating anthropoids may be much more adaptable to environmental conditions and pressures than previously thought (Tan, Yang, & Niu, 2013). Possibly the same applies to the wood ape; that is, even if the species has evolved toward nocturnalism—perhaps because of competition and pressure from other species—it may be the case that it can also

be quite active during the day, as is indicated by way of the NAWAC's numbers of daytime visual contacts and records of activity. Owls, for example, possess extraordinary nocturnal vision, but they can also see quite well in broad daylight. If the wood ape's vision is not trichromatic, it may be that, comparatively speaking, humans have a slight visual advantage during the day, possibly improving opportunities for documentation.

A diminished or absent trichromatic vision capability in wood apes, if true, would seem to undermine the aforementioned suggestion that the species may be able to see "further" into the near infrared. Another argument against the capability of seeing in the near infrared is of the most basic nature, and that is that near infrared signals are of too low energy to "activate" the photopigments found in long wavelength cones, the cones that are known to detect, and therefore transmit, red light. The fact is simple. There are no formally described mammals that are known to have this visual capability. The idea that the wood ape may possess the ability to see in near darkness and see wavelengths approaching near infrared, are biologically incompatible with one another.

Another hypothesis regarding camera trap avoidance, perhaps more reasonable than a physiologically-based hypothesis, is that wood apes intentionally steer clear of cameras (Higgins & Colyer, 2010). There is a precedent for such behavior. A study conducted in the Nature Conservancy's Dye Creek Preserve, located in the foothills of the Cascade Range in California, set out to test coyote caginess. The preserve had been closed and the coyote population had not been hunted. Camera traps were deployed throughout the area. Surprisingly, the resident alpha coyotes were not photographed a single time during the three-year study. The alpha coyotes did not leave; they continued to stay in their territories while actively avoiding the cameras traps. The authors note that, "Alphas are probably the only coyotes that are truly territorial in terms of defending and fully exploiting their space." They regularly traverse their entire territories. These animals "actively tracked human activity within their territories and presumably gained information about camera stations as they were being set up." They "were cautious of camera stations because of their association with humans and not simply because they were novel," (Sequin, Jaeger, Brussard, & Barrett, 2003, p. 2023).

In light of the coyote study, it becomes reasonable to hypothesize that wood apes have managed to avoid NAWAC camera traps in much the same manner as the alpha coyotes, by actively tracking humans within their territory and cognitively avoiding the cameras because of association with humans and because they are novel and out of place.

Cross River gorillas (*Gorilla gorilla diehli*), the rarest and most elusive of all the known great apes, also serve as another example of the difficulty involved in photo-capturing a furtive and wary species, particularly an anthropoid. Cross River gorillas are known for their extreme wariness. They are rarely seen, even by the biologists who set out to study them. Only recently was the species caught by camera trap, and then only after considerable resources, funding, and collaboration had been dedicated to fully studying and surveying the animals (<http://tinyurl.com/nayavzp>). It may well be the case with the wood ape, as with the Cross River gorilla, that camera trap photo-captures may remain as elusive as the wood ape itself until after a type specimen has been obtained and a formal description has been generated.

Wood Apes and Odor

During the project, the NAWAC repeatedly documented odors that its researchers described as being similar to a “sweaty horse,” “musky,” or as reminiscent of what one might encounter in the great ape section in a zoo. Despite the use of such descriptors drawn from known and common animals, which allow for the provision of a frame of reference, the odors stood out as being quite distinctive and unique. Sometimes researchers encountered odors, in tandem with other activities ascribed to wood apes, that were acrid, fetid, or possessing a urine-like quality. Over time, NAWAC members learned to recognize and use the odors as indicators that an animal was in the area, sometimes prior to rock-throws or other activities.

Veteran researcher and author John Green suggested that witnesses reporting encounters with a North American ape as well as an odor occurred in approximately eight percent of all reported encounters, although he concedes that it is possible that smells were present in more cases, but that they were undetected by the witnesses due to “distance or some other reason” (Meldrum, 2015, p. 16). The detection of odors by the NAWAC seemed to be more common than Green’s numbers would suggest; however, there were many activities and encounters documented by the NAWAC over the four-year period during which no odors were mentioned or noted. It is important to note here that, although the human sense of smell is not nearly as deficient as is commonly perceived (Shepherd 2004), recognition of an odor is necessary before a human can report it or discuss it.

Indeed, most humans typically rely more on their vision and hearing, and as such they may be less inclined to even note the presence of an odor, particularly in a setting with which they have limited familiarity, or where the odor may be less overpowering and more subtle or mild, as was the case in a number of NAWAC incidents involving encounters and odor. This

may be why in United States Air Force SERE training, where the Air Force sends its airmen for training in survival, evasion, resistance, and escape, instructors push airmen—individuals who likely are unaccustomed to recognizing and harnessing their sense of smell—to use all their senses when in a hostile environment (U.S. Air Force, 2008). In a wilderness survival scenario or hostile environment, for example, elevated odor acuity could help to save a life (wound infection), lead to a food source (detection of a newly encountered plant), or, in the case of documenting a species of wildlife, help to detect the presence of the species. This could also, in part, be why odors are not reported on a more common basis in tandem with visual contacts. Conversely, some humans are endowed with an abnormally acute ability to detect odors, so they would be more inclined to detect odors, even in the absence of a visual or auditory stimulus (Engen, 1982).

At any rate, there appears to be a parallel with the gorilla. During his time spent surveying mountain gorillas, Schaller noted a very strong odor that reeked of musky sweat (1976). Likewise, Dian Fossey described the odor of a silverback as a “powerful musky odor” (Meldrum, 2006, p. 187), which is a description not unlike those given many times by NAWAC researchers as they detected similar odors. It has long been thought that gorillas produce such odors in response to stress, fear, or a threat. Recently, however, a study indicated that western lowland gorilla adult males may intentionally produce odors for purposes of communication (Klailova & Lee, 2014). The researchers also indicated that the study subject in particular possessed the ability to cognitively engage or disengage the odor, depending on circumstances. That is, the smell could be produced as desired to communicate strength and power, or conversely, it could be “turned off” should the subject desire a state of furtiveness. Since anthropoids typically demonstrate less dependence on their olfactory sense than other animals, such cognitive control of scent was a surprise to researchers. The study has potential implications for wood ape research because of the similarities in descriptions of wood ape odors and gorilla odors.

Wood Knocking

The production of seemingly structured and repetitive sounds created by striking trees or other objects, referred to by NAWAC personnel generically as “wood knocking” behavior, is the predominate wood ape related activity documented in Area X. Clearly, the distinctive sounds repeatedly noted by NAWAC teams over a four-year period were indicative of some type of basic long-distance communication. The majority of these sounds were likely between individuals, intended for each other, but on occasion they appear to have been

precipitated by knocking sounds produced by humans. Beyond that, only guesses can be proffered regarding what the knocks mean.

Until recently it was thought that there are no known examples of wood knocking, per se, as a form of long-range communication among the known great apes, such as that reported and described for the wood ape. According to primatologists Arcadi, Robert, and Boesch, “long-distance non-vocal acoustic signals are rare in primates.” However, among mountain gorillas (*Gorilla gorilla beringei*) and chimpanzees (*P. troglodytes*), long-distance communication exists in the form of “chest-beating” among the gorillas, and “buttress drumming” and “knuckle-knocking” among the chimpanzees (1998, Introduction; Whiten, et al., 2001).

Although chest beating among mountain gorillas is thought to be primarily related to displays of aggression intended for other individuals within visual detection, Schaller (1976) documented that it was used as an acoustic signal—its exact purpose not altogether clear—when gorillas were observed responding with chest beats to the sounds of other chest beats occurring out of visual range. Schaller also reported that the chest beats could be audibly detected at distances of one mile, with possible augmentation of resonance through “inflatable laryngeal air sacs” (Arcadi, et al., 1998). Primatologist Ian Redmond also noted that gorillas have distinctive chest-beat patterns that he believed were recognizable by other gorillas (Redmond, 2015). Even as its exact purpose remains unclear, chest beating among mountain gorillas, as some sort of long-distance signaling, may be kindred to the wood knocking produced by the wood ape.

Among the known great apes, chimpanzee “buttress drumming” is perhaps even more similar to the “wood knock” ostensibly produced by wood apes. Arcadi, et al., defined buttress drumming as follows:

Chimpanzees generate acoustic signals by hitting a variety of substrates with their hands and/or feet, including their chests, the ground, tree trunks, and the buttresses of trees...Buttress drumming is audible for at least 1 km and is typically done by adult males. The drummer may stand on the ground and hit on both sides of the end of the buttress, strike a single side in passing, or perch atop the crest at an intermediate point along its length and hit with hands and/or feet...drumming on tree buttresses by chimpanzees occurs...during long-distance acoustic exchanges between individuals that are not in visual contact. Buttress drumming therefore appears to be primarily a long-distance signal. (1998)

Although non-vocal long-distance communication among non-human primates may be rare, as asserted by Arcadi, et al. (1998), the literature clearly indicates that the known great apes do engage in such activities. For example, in addition to buttress drumming, chimpanzees demonstrate yet another means of long-range communication in the form of the so-called “knuckle-knock.” As the term implies, the animals rap their knuckles on trees as a means to broadcast a message to distance chimps for mating purposes (Friend, 2000; Whiten, et al., 2001). An even more dramatic finding, and perhaps more pertinent to wood ape research, was the recently documented observation that “chimpanzee drumming bouts given when traveling contain information about individual identity and that drumming could serve as an important long distance signal that functions to influence grouping dynamics amongst fission-fusion society members.” These long-distance signals evidently “function to coordinate the movement and spacing of dispersed individuals within a community, rather than as signals to group members in the immediate audience” (Babiszewska et al., 2015). Another possibility for wood knocking is that it serves as an auditory communication signal designed to advertise a defended territory to others of its kind from another troop.

It is conceivable that the wood knocking instigated by wood apes is not produced by banging wood or rock on a tree, but by whacking tree trunks with hands or feet, as seen in chimpanzee buttress drumming. It is also possible that using rocks on wood produced some of the knocking sounds documented by the NAWAC, as determined by teams as they attempted to recreate the sounds. Another alternative to consider is that the wood ape produces the sound orally. To be sure, many of the sounds documented by NAWAC teams are loud audible signals that did indeed sound as though a tree trunk was literally struck with a baseball bat, but it is conceivable and reasonable that a hypothetical ape considerably larger than the mountain gorilla would necessarily possess enormous strength and might well be able to produce loud rapping or knocking sounds, as with chimpanzees, by striking a diversity of substrates (chest, ground, trees, rocks, etc.) with hands or feet.

It may be that the wood ape uses wood knocking as a sort of “Morse code” only in the presence of humans who are seen as threats. To be sure, many of the most notable instances of wood knocking occurred while NAWAC personnel were concealed in an overwatch tent covertly observing the nighttime environment and documenting unusual activities. This seems to beg the question of whether or not the activities would have occurred in the absence of a human presence. This might be answered by leaving audio recording devices to run and record well after teams have gone. Perhaps the human presence is what draws the apes to the

cabins in the first place. It should be pointed out that the NAWAC does have audio recordings of wood knocking sounds made during nights when all NAWAC team members were sleeping.

Another possibility for wood-knocking is that it is indeed an auditory communication signal, but that it is largely designed to advertise the wood ape's sociographical area or defended territory to other species, or even to others of its kind that are from another troop. If true, this would mean that wood knocking is not so much intended as an intraspecies communications between members of the same troop, but is a sign-post and part of a multi-layered process designed to convey to interlopers—both intraspecies and interspecies—that the territory is occupied, and that the occupying group of animals will defend the territory.

Rock Throwing

Rock throwing, or using other objects as projectiles, is now widely accepted as normal behavior for the known great apes. Through observations in the field over the last several decades, chimpanzees have been documented to commonly throw rocks and other items such as feces or branches at humans, other apes, and monkeys (Wilson, 2014). Rock throwing has been strongly suggested for early hominins and has been documented among the known great apes “in the context of both inter- and intra-species agonistic encounters, although some have described it as a means of initiating play or communication” (Hopkins, Russell, & Schaeffer, 2011). It has also been documented that rock throwing among the known great apes, particularly for chimpanzees, occurs during dominance demonstrations, strength exhibitions, intimidation displays, or outbursts of emotion (<http://www.janegoodall.ca/about-chimp-behaviour-com.php>). Chimpanzees have been documented to cache stones while calm for later use during periods of antagonistic and agitated mental states, indicating “advanced consciousness and cognition traditionally not associated with nonhuman animals” (Osvath, 2009, summary section). For chimpanzees, when rock throwing behavior it is directed at a group of people, it “has an instant and dramatic effect” and serves as “a way to evoke reactions” (Osvath, 2009, main text).

The rock throwing events documented by the NAWAC during the last four years support much of what has been reported in the past regarding supposed wood ape or sasquatch behavior. That literature—historical and modern, Native American and Euro-American—concerning wood apes indicates that rock throwing is a primary behavioral characteristic. Possible reasons for such behavior, as with chimpanzees, could include: evoking reactions, demonstrations of dominance, and intimidation displays. In addition, perhaps, at least in the

NAWAC study area, the behavior is intended for purposes of making noise. Oftentimes rocks were heard or seen to strike the roofs and walls of cabins and surrounding metal structures with the effect of creating loud bangs. In a more utilitarian vein, it has also been suggested that the rock throwing/noise making could play a role in flushing small prey such as rodents, but in the context of Area X and the proximity of the impacted structures to humans, this would not seem to be a motive.

In the context of the wood ape, behavior such as repeated rock throwing could very well indicate an advanced cognitive and planning ability at least equal to that of the chimpanzee (depending on whether or not the stones were previously gathered and tossed at a later opportune time, or perhaps during a different mental state). It should be reiterated that accounts of rock throwing behavior for the wood ape appeared in very early reports, with one such account dating from as early as 1840 regarding the Spokanes in the Northwest (Bindernagel, 1998; Meldrum, 2006). Conversely, the use of stones as projectiles has only been reported and documented in the known great apes during the second half of the twentieth century, with Jane Goodall and other primate researchers first cataloguing such behavior in chimpanzees in the 1960s (<http://www.janegoodall.org/chimp-central-toolmakers>).

As with wood knocking, rock throwing may well be part of one of the layers of the wood ape's defense-of-territory behavior, perhaps a form of ritualized aggression. The ability to hurl projectiles would enable a wood ape to display power or intimidation from a position of safety, with the intent of warding off interlopers while retaining territory without engaging in the risky act of direct, physical contact. Reports of encounters with wood apes that involved rock throwing inevitably end with the human(s) leaving the area (usually in a state of high anxiety or fear). If the wood ape has indeed resorted to this behavior since the earliest days of contact with humans, perhaps the species is "hard-wired" to engage in the behavior as a successful way to chase off humans.

Noise is Power?

Given the frequency of incidents involving loud bangs, thumps, knocks and, in some cases, sounds resembling explosions, documented by the NAWAC, it is reasonable to surmise that the wood ape has a proclivity for using loud sounds for purposes of intimidation or projecting power or dominance. There is a precedent for such behavior in the world of primates (Babiszewska et al., 2015). If true, it is also reasonable to hypothesize that wood apes could interpret loud noises made by humans as indications of attempts to intimidate or

project power or dominance. This kind of instinctive reaction might also go far toward explaining the bangs and knocks sometimes heard after the firing of a rifle or the running of loud equipment, such as chainsaws and generators. Another explanation might be simply that some noises generated by NAWAC personnel were unnatural, loud, and irritating, and the rocks thrown or bangs produced in apparent response represent displays of displeasure.

Events interpreted as the tossing of huge rocks down the mountain slope or in the rocky creek bed certainly produced some of the most booming reverberations documented during the four-year period. NAWAC observers, upon hearing the seemingly calamitous sounds, sometimes compared to dynamite explosions, were often unnerved, especially upon considering the raw force and strength behind any such act. This kind of event was often interpreted as one designed to intimidate—if in fact it was wood apes throwing huge rocks—or it could have been done for the purpose of projecting strength and power, which certainly is not far off from intimidation. Thus the creation of loud noise would be tied to attempts to establish dominance within territory.

Just as impressive an event, if not more so, is that produced by the dramatic destruction of mature trees. Without question, the tremendous sounds of a large tree cracking, snapping, falling over and exploding as it crashes to the ground, often within close proximity of the cabin and researchers, had a way of causing concern, if not outright fear, in team members. Naturally, it goes without saying that trees die of natural causes and fall in the forest; however, the NAWAC's documented cases (over 30) of falling or downed trees (not including branch break events) over the four-year period—many of which were within 100 yards of the cabin, and many of which were healthy green trees—can be reasonably attributed to something other than natural causes, particularly given the context of other activities documented by the NAWAC.

The question has been asked: Is it even possible for an animal to cause a tree, such as a healthy mature black walnut tree, to fall? If the event observed on May 28, 2014 by almost an entire NAWAC team—including two independent observers—is any indication, it may well be possible for a large, exceptionally powerful and heavy, animal to climb a tree up to the higher reaches, for whatever reason, and by virtue of its weight and strength cause the tree to sway back and forth until the tree snaps. It seems to be a common assumption that, if wood apes exist, they must not be arboreal animals, simply because of their size. However, the NAWAC has documented observations of wood apes in trees, particularly small ones, and much of Area X is old-growth forest, full of large mature trees. Based on NAWAC field

reports, it appears likely that wood apes take to trees on occasion, perhaps to forage for food, but possibly, on occasion, to create loud and intimidating noises intended to drive out or frighten what may be perceived to be territory invaders. In 2014, the number of trees downed in the presence of NAWAC researchers dramatically escalated. Considering recent and extensive clear-cutting that took place just a few miles from Area X, some NAWAC members wondered if this “escalation” was produced by or as a result of the arrival of displaced apes. Or were the displays designed to take intimidation displays up a level? Hopefully 2015 will reveal concrete answers regarding whether or not noise is power.

Why Do They Stay?

It is reasonable to hypothesize that the NAWAC’s study site is within the territory of a troop of wood apes, and that they sometimes resort to various facets of ritualized aggression to defend territory and/or resources. Possible explanations for why the territory is valued and why the animals remain, despite the NAWAC’s repeated incursions in the territory, will be discussed and explored here.

Many of the behavioral displays of the wood apes in the area—wood knocking, rock throwing, banging on cabins, breaking branches and trees, etc.—may be indicative of ritualized aggression, that is, behaviors designed to intimidate, settle territorial conflicts, or ward off interlopers from territory without resorting to direct physical conflict, which costs much in terms of energy and is potentially ruinous (Huntingford & Turner, 1987). Other than a few charging incidents—which may well have been bluff charges in the manner of gorillas—the NAWAC has not documented any incidents of overt, physically aggressive, behavior. If true, the ritualized aggression would indicate that the troop of apes in Area X is defending territory. If this is the case, it could explain why the apes remain in place even after repeated NAWAC incursions into the area for more than a decade.

There are a number of reasons why animals, including primates, might choose to remain in and defend a given area. Some primate species are willing to engage in far more risky behavior to control their territory than others. At one extreme, for example, chimpanzees have been documented as going to war with and killing members of other troops of chimpanzees for control over territory that contains food (Mitani, Watts, & Amstler, 2010). On the other hand, bonobos (*Pan paniscus*) do not go to war over territory; they share territories and even allow for mating with members of other bonobo troops (Grant, 2013).

The control of territory inevitably comes down to control of resources. All species require four essential elements for survival: food, water, shelter, and space. The wood ape is no different. These critical resources, necessary for survival, appear to exist in Area X in adequate supply, particularly based on the observations of what appear to be young animals. For the wood ape—possibly highly sensitive to human disturbance and habitat fragmentation—a critical resource component could very well be the characteristics of the habitat, apart from the availability of food, water, and shelter.

The area is certainly abundant in terms of water. As mentioned earlier, it receives around 60 inches, or 1,325 millimeters, of rainfall per year. There are creeks, springs, and ponds in the area that provide water throughout the year. Even in 2011, a year of drought, when water was more scarce, permanent water sources remained.

As discussed in the Introduction section of this paper, the area is extremely remote and rarely sees human visitors. Throughout more than a decade of NAWAC forays into the location, few humans outside the NAWAC were ever encountered. Even the sounds of motor vehicles off in the distance were rare. On rare occasions ATVs have been heard to wander into the area, only to leave very soon after arrival. Human visitation levels have remained low since the NAWAC's first trips, and the NAWAC limits the number of members admitted to the area. NAWAC teams, on average, have regularly consisted of four people. Serendipitously, this may well represent an appropriate number of people to generate both curiosity and irritation, while not to the level of tolerance limits that could lead to direct conflict or displacement for the wood ape. The remoteness of the area, its lack of development and exploitation, and the scarcity of human visitors, could very well allow the species to feel the security necessary to procreate and raise and protect offspring. The observations of the NAWAC seem to support this possibility.

Certainly, the area contains an abundance of food sources, particularly in the form of fruit and nut-bearing trees: mockernut hickory (*Carya tomentosa*), bitternut hickory (*Carya cordiformis*), and Eastern black walnut (*Juglans nigra*) exist in abundance, along with other species. These trees are dominant in the low-lying riparian area at the heart of the study site, and all yield nutritious kernels, high in protein and unsaturated fats. The extraction of the kernel from the fruit from these trees is difficult, which may help to shed light on the discovery by NAWAC teams of what appeared to be nut-crushing stations in Area X.

Based on NAWAC observations, wood apes are not likely to go to the extremes of chimpanzees and initiate direct physical confrontations to control territory containing food sources, but some of the observations of the last four years could indicate that the creatures may defend it through ritualized aggression. If the wood ape is an opportunist like the chimpanzee, it may also, from time to time, supplement its mostly herbivorous diet with meat. The area is a paradise for any omnivore, featuring an abundance of fish and game of all sorts.

Another possibility regarding the apparent permanency of residency is that alternative choices are limited. This line of speculation presupposes that the wood ape's limits for tolerating human interlopers has been reached, but the troop of apes has no choice but to remain in place because it can go nowhere else in the immediate region that is suitable. Other possible reasons for "Why do they stay?" could include: 1) one or more troops of undiscovered apes control territories that border the Area X apes and, unlike bonobos, the apes are unwilling to allow territories to overlap; 2) clear-cutting, logging, and fragmentation have forced the troop to remain in place because no other readily accessible places in the ecoregion have adequate resources or allow for birthing, raising, and protecting offspring; 3) the wood ape prefers old-growth forest and due to exploitation, the range of the old-growth forest keeps the troop in place; or 4) the species is sedentary and exhibits high levels of breeding site philopatry.

After the first year of the Ouachita Project, NAWAC researchers questioned whether or not the wood apes would remain in place. After four years now, it may be reasonable to hypothesize that, short of logging activities, human development, or dramatically increased levels of human incursion in the immediate area, the species will continue to reside in the valley. Perhaps, as has been discussed, the local animals have little in the way of alternative choices for habitat, but it appears to be indisputable, presuming that one accepts the possibility of the existence of the wood ape in the first place, that the area represents a critical refugium for the species. The geography of the region certainly lends credence to that possibility, since the Ouachita Mountains served as a Pleistocene refugium. Because the species has not been officially described, it is impossible to know at this point whether or not the animals in Area X are isolated or if they represent a relict group of a once more widespread species. Certainly logging and clear-cutting practices throughout the area would tend to put pressure on any species that prefers old-growth dense forest for its core area.

All of this, of course, is speculation. The NAWAC has diligently endeavored to address issues pertaining to the biology of the North American wood ape. The Ouachita Project has entailed years of planning and effort, no small expense, and thousands of hours of fieldwork, but the basic questions remain. Why do the creatures stay in Area X? How many wood apes live there? What is the status of the population? And so on.

Ultimately, the species must be definitively documented so that professionals can address these critical questions. Hopefully, this report will serve to encourage others to join the mission in meaningful ways.

Appeal

Subsequent to his first trip during the summer of 2000 into the locale that came to be referenced as Area X, current NAWAC chairman Alton Higgins sought to include objective individuals as participants and independent observers of group documentation activities. Among those who have visited the site for stays of at least a few days: Reid Nelson, Director, Office of Federal Agency Programs at Advisory Council on Historic Preservation, and archaeologist; Curtis Nelson, Senior Scientist, Department of Entomology, University of Minnesota, and microbiologist; Brian Brown, partner at Ideapark, online marketing and branding firm, founder of The Bigfoot Forums; John Mionczynski, naturalist, ethnobotanist, and wildlife biologist; Ron and Carolyn Engel-Wilson, research wildlife biologists (retired), Arizona Game & Fish Department; Kathy Strain, Forest Archaeologist for the Stanislaus National Forest, Forest Heritage Resource and Tribal Relations; David Mizejewski, ecologist, naturalist, television personality and spokesperson for the National Wildlife Federation; Daniel Falconer, weta workshop graphic designer and author.

Following their visits to Area X with NAWAC teams, Brown and Strain officially joined the NAWAC and have since spent weeks on site engaged in documentation efforts.

The NAWAC Board of Directors extends a challenge and invitation to academicians, scientists, and professionals within wildlife/conservation-oriented organizations and governmental agencies to contact the organization if you are interested in collaborating with the NAWAC and/or if you are willing to accompany a team to assist in efforts to document the kinds of incidents described in this paper. If desired, the NAWAC will take steps to insure participation/collaboration is not made public. John Green and Jeff Meldrum have had conversations with Russ Mittermeier, distinguished primatologist and former president of Conservation International, about this subject, and Mittermeier mentioned the possibility

of joining in the pursuit of this species (Meldrum, 2015, pp. 10-11), as have others such as renowned primatologist Ian Redmond. The Ouachita Project is the perfect opportunity for scientists such as Mittermeier and Redmond to actively join in and become a part of what would certainly be the discovery of the age.

Conclusion

The NAWAC initiated the Ouachita Project with many questions about the purported existence of an uncatalogued anthropoid in the Ouachita Mountain Ecoregion. Indeed, when the first team arrived on site on June 4, 2011, there was no real sense of how the project might go. Although the small amount of documented activity during the previous November trip had been intriguing, as had a number of other documented events from 2000-2010, participants were generally ambivalent regarding the possibility that any sort of hard contact with an undescribed species of North American ape would result from the new research approach. Even though the NAWAC corps were eager to put the Anthropoid Hypothesis to the test, it was extremely difficult to overcome or explain away the nagging fact that the NAWAC had placed significant numbers of the best commercial cameras available in the valley for a period of five years with no photo-documentation of a novel species to show for it. If such a species did exist, then it seemed reasonable to assume that at some point during the five-year Operation Forest Vigil, photo-captures would result. Because of this, to no small degree, most of the NAWAC membership harbored doubts or skepticism regarding the permanent presence of an ape species inhabiting the region. However, by the time the second group completed its scheduled week of observation and documentation in June 2011, most in the NAWAC were stunned by the reports submitted by returning field teams.

By the end of the fourth year of the Ouachita Project, there was no longer any debate within the NAWAC regarding the possibility of an unlisted species in the Ouachita Mountain Ecoregion; rather, discussions revolve around how to best obtain independently verifiable evidence in the form of a type specimen so that formal description can take place and the real work of conservation, preservation, and behavioral study can begin. With the rate at which logging, fragmentation, conversion, and destruction of habitat are taking place, the matter of formal description is urgent. Every year that passes without formal description is one more year that the future of an undocumented but extant species of ape residing in the Ouachita Mountain Ecoregion is left to chance. Indeed, given the fact that all known great ape species are at risk of extinction, it is reasonable to postulate a similar status for the North American wood ape (U.S. Fish & Wildlife Service, International Affairs, n.d.).

In the wake of four years and thousands of hours of persistent and often grueling field work, resulting in what we believe to be significant and repeated observations, and despite those observations remaining beyond the scope of independent verification for the time being, the

NAWAC concludes that a novel or relict species of anthropoid resides in the Ouachita Mountain Ecoregion. Within the specific study area described in this report, the species is represented by a small troop of animals, several of which have been repeatedly observed by NAWAC members, and the troop is evidently producing young, as observed by the NAWAC.

Other aspects regarding the behavior and biology of the proposed ape species include:

- Like the known great apes, it sometimes hurls rocks at intruders into its habitat.
- Unlike the known great apes, it is mostly bipedal.
- It has a predilection for breaking branches and even pushing over trees as part of its threat display arsenal.
- Like gorillas, the species often manifests a fetid odor.
- Members of the troop communicate via a cryptic code of loud knocks on trees and other surfaces.
- The species has a propensity for noise making, and it may equate noise with prowess or power.
- The creatures appear equally at ease traversing the heavily wooded, rocky, mountainous, and often-treacherous terrain of the Ouachita Mountain Ecoregion in the light of day or in the inky darkness of night.
- The species, as it has been documented by the NAWAC, is possessed of an extremely powerful sense of curiosity.
- It possesses an ability to use its environment to escape detection as well as any animals in North America, yet at times chooses to betray its presence through displays and apparently assertive behavior.
- It appears to use distraction tactics.
- It appears to employ a variety of vocalizations including those resembling traditional ape vocalizations, howls, pant-hoots, mimicry, and what has been described as a sort of faux speech.
- Most of the time, it is not a solitary animal.
- Individuals vary in color: gray, black, brown, blonde or honey, and reddish-brown.
- Although perhaps tending toward nocturnalism, the species is active during both daylight and nighttime hours.
- The species seems to cognitively avoid camera traps.

Moreover, since the animals give every indication of being permanent residents, the NAWAC infers that the region it has dubbed “Area X” is a refugium for the enigmatic species. It is possible that it may be one of the last remaining refugia for the species; given the current state of knowledge regarding the species—since most scientists simply refuse to even discuss or consider its existence—it is simply impossible to know at this point.

It is, therefore, necessary for the NAWAC to continue efforts to properly document this enigmatic anthropoid species that has successfully eluded official detection for centuries. In spite of the nearly insurmountable odds, several collection opportunities have been presented during the last four years. With continued determination and focus, the NAWAC is convinced that a specimen can be secured, and the organization remains committed to that goal for the sake of the recognition and conservation of the species and its habitat.

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Appendix

Audio Files

The audio files below were recorded during the Ouachita Project using TASCAM DR-40 and Marantz PMD670 digital recorders, and Sennheiser MKE102S/K6 omni-directional microphones. All but one of the recordings were made in the very early morning hours while team members were asleep or were on overwatch. In most of the files there is an abundance of insect noise. These files have been amplified and equalized, and in a few cases edited for the sake of brevity and file size. They were culled from literally thousands of hours of audio and are only a small representation of the total audio recorded by the NAWAC during the Ouachita Project. They are all in the WAV audio file format.

[Audio clip 1](#): October 2012, as team members lie in bed asleep, this wood knock occurred just prior to dawn and was right outside the cabin.

[Audio clip 2](#): June 2011, a rock impact then a very loud wood knock rings out as team members sleep.

[Audio clip 3](#): June 2013, this audio file provides an example of the “huffs” documented by NAWAC teams.

[Audio clip 4](#): June 2013, huffs then a rock hits the cabin.

[Audio clip 5](#): July 2013, more huffs before a rock slams the cabin.

[Audio clip 6](#): July 2012, this event occurred right outside Daryl Colyer’s window and he could hear it as it happened. There is a whistle, shuffling, pants/huffing, and then a rock is thrown onto the cabin porch.

[Audio clip 7](#): June 2013, huffs, a rock cuts through the trees, slams the cabin, and then bounces onto the ground.

[Audio clip 8](#): June 2013, a single huff, then a rock zips through the trees and pounds the cabin.

[Audio clip 9](#): June 2013, a rock rips through tree limbs and then falls short of the cabin thumping the ground.

[Audio clip 10](#): June 2013, while the team is talking in front of the cabin around the fire circle, a rock flies through trees and strikes the cabin on the opposite side.

[Audio clip 11](#): June 2013, a rock hits the loose corrugated metal on the shed and bounces.

[Audio clip 12](#): September 2012, the so-called “rain of rocks.” While the team lay in bed asleep, the cabin is repeatedly struck by rocks on the roof, and on two walls, including a porch. The actual event lasted several minutes; here, it has been abridged for the sake of file size.

[Audio clip 13](#): July 2012, what team members refer to as a “mouth pop,” or “click,” documented many times in the field.

[Audio clip 14](#): June 2011, a recording from NAWAC field audio of what could be “faux speech.”

History of Encounters

The Painted Rock “Hairy Man” Pictographs, located in a rock-shelter concomitant with a prehistoric settlement near present-day Porterville, California, suggest an association between the Tule River Indian tribe—their preferred name, although actually associated with the larger ethnographic group known as the Yokuts—and large hairy bipeds going back approximately 1000 years (Strain, 2012). The Tule River Indians described their “Hairy Man” as “a creature that was like a great big giant with long, shaggy hair” (p. 3). The pictographs were openly recognized by the tribe as connected to the sasquatch or wood ape in 1975 when the daughter of a tribal elder “identified Hairy Man as being the same as Bigfoot” (p. 3).

Regarding curious, carved, stone heads collected from the Columbia River valley of Eastern Oregon in the late 1800s, nineteenth-century paleontologist O. C. Marsh, in an 1877 address to the American Association for the Advancement of Science, said, “Among many stone carvings that I saw there [Columbia River] were a number of heads which so strongly resemble those of apes that the likeness suggests itself,” (as cited by Sprague, 1980, p. 229). Roderick Sprague, an Emeritus Professor of Anthropology at the University of Idaho, considered the stone head carvings collected along the Columbia River, to which Marsh referred in his 1877 address, to “share non-human but anthropoid features.” Sprague further proffered, regarding the carvings, that, “a relationship between these stone heads and the sasquatch phenomenon is suggested” (1980, p. 229).

Early Euro-American settlers in the Northwest wrote of Native American stories that sound suspiciously akin to modern mystery ape reports. The Reverend Elkanah Walker of Fort Colville in the Washington Territory, a Christian missionary to the Spokane Indians, recorded the following in an 1840 letter to the American Board of Commissioners for Foreign Missionaries:

[The Spokanes] believe in the existence of a race of giants which inhabit a certain mountain off to the west of us...They frequently come in the night, steal their salmon from the nets, and eat them raw. If the people are away they always know when they are coming very near by their strong smell, which is most intolerable. It is not uncommon for them to come in the night and give three whistles. Then the stones will begin to hit the houses. The people are troubled with their nocturnal visits. (as cited by Meldrum, 2006, pp. 85-86).

Tribes such as the Creek, or Muscogee, originally from the Georgia region prior to the 1800s, now have lands in present-day Oklahoma and, according to their tradition, the *Honka*, or hairy man, walks on “two legs” and is “hairy all over.” It is said that the *Honka* in Creek tradition might be the equivalence of the “Bogey” man in European settler culture (Strain, 2008, p. 241). Moreover, the *Honka* is not just a figment that filled minds of the past; reports from the twenty-first century suggest it is, in the very least, still a familiar concept in Oklahoma folklore, if not a derivative of actual encounters with a relic or novel unknown species (<http://woodape.org/reports/report/detail/414>).

There is no shortage of historical anecdotal accounts regarding supposed encounters with animals that fall within the descriptive parameters generally given for the wood ape in Oklahoma, Arkansas, Louisiana, or Texas, particularly where the four states conjoin. The state of Missouri is also known to have a history of similar reported accounts. An oft-repeated misnomer regarding anecdotes is that they have no or very little value in the world of science. To the contrary, observation is the beginning of science. Indeed, natural history has examples of anecdotal accounts from indigenous peoples that provided guidance for biologists and naturalists seeking out novel or extant relic species in various regions around the globe (Reel, 2013). What is more, historical accounts indicate an awareness of such an animal—whether based on myth or authentic encounters—that substantially predates any modern media- or hoax-driven phenomenon. The historical accounts also indicate that there was a familiarity with such an animal, or concept of it, in the *south-central region* of North America that was antecedent to Euro-American settler reports from the Northwest. The region in general has a history to such an extent that there exists a litany of nicknames that supposedly were derived from encounters with wood apes, such as the “wildman,” “the Noxie Monster,” “the Honka,” “Momo,” “the Fouke Monster,” “Ol’ Mossyback,” “Monkey Man,” and “Rougaru,” to name just a sample. Many, if not most, of these names were well-established before the modern media phenomenon, begun in the late 1950s, of “Bigfoot.”

Among the earliest reported accounts in North America were reports from Euro-American settlers beginning in the 1830s of encounters spanning a number of years between “sportsmen” and “hunters” and a “hairy wild man,” as reported by the *New Orleans Picayune Times* in 1851. This “wild man” was said to be of “gigantic stature” and reportedly was occasionally seen and widely familiar to Arkansans in St. Francis, Greene, and Poinsett Counties. The best known sighting of the “wild man” took place in 1851 when two hunters allegedly spotted it harassing a herd of cattle. The creature was described as man-like, huge in size with a body covered in hair. Once it caught sight of the hunters, the creature supposedly

fled at great speed, “bounding twelve to fourteen feet at a time.” The footprints left behind by the “wild man” measured “thirteen inches each,” (Bord & Bord, 2006).

In May 1849, in what is present-day McCurtain County, east of present-day Idabel, Oklahoma, a “hunter-trapper” reportedly observed a “strange critter” in a swampy area with a description common to reported sightings of large hairy bipeds, as noted in the diary of one Bertrand Toninkhah (Bord & Bord, 2006). In 1856 along the Arkansas-Louisiana state line, a “wild man” was said to have pulled a man off his horse and bit him. In 1925, near Alton, Missouri, just north of the Arkansas state line and very near what is today the Mark Twain National Forest, there were a few reported sightings of what observers described as a “man-like animal covered with brown hair and having a monkey-like face.” There is also a 1926 account of a physician who reported seeing a hairy upright “thing” illuminated by his headlights as it ran across the road in front of him as he was driving his Model T Ford near Goodwater in McCurtain County. In the spring of 1926, two hunters reportedly spotted a “big, black, hairy ape-man” in a clearing near the Mountain Fork River in McCurtain County. The men shouted at the figure and it ran away. One of the hunters then released his dog to pursue the strange creature. Reportedly, roughly one hour later the men located the corpse of the dog; it had “been just almost torn in two,” presumably by the creature (Bord & Bord, 2006). In 1947, near Piney Ridge, Missouri in the Ozarks, hunters reported hunting a large upright hairy animal after it had killed sheep. During the hunt, the hunters allegedly lost their dogs to the animal. Another similar report from southeastern Missouri had an ape-like animal attacking and killing cattle and horses before someone shot at the animal; its condition was unknown in the aftermath of the shooting.

In the 1950s began a long list of reports from southwestern Arkansas in the Miller County region of upright hair-covered ape-like creatures. The sightings were so common there that the residents of that region gave it the name “The Fouke Monster” because so many of the reported encounters were close to the small Arkansas town of Fouke. Several residents claimed to have taken shots at animals that all had similar descriptions, such as standing “seven or eight feet tall,” being covered with “reddish-brown hair,” walking bipedally “like a man,” having “long arms,” and a “dark brown nose...flat and close to [the] face” (Blackburn, 2012, p. 59).

The reported sightings in the region continued into the late twentieth and early twenty-first centuries. In 1975, again in McCurtain County, Oklahoma near Yashau Creek, which feeds into the Little River, a hunter reportedly saw an eight-foot tall upright animal with grayish-

black or charcoal hair that fled when it saw the hunter (Bord & Bord, 2006). In 1988, also in McCurtain County, an experienced hunter and high school coach was hunting squirrels when he allegedly saw an upright hair-covered animal crashing through the dense forest nearby (<http://woodape.org/reports/report/detail/386>). In 2000, a champion coon-hunter reported running into a hair-covered “creature of immense size” as he and his dogs hunted along the flooded riparian margins of the Sulphur River in Miller County, Arkansas (Blackburn, 2012). In September of 2003, a married couple reported an encounter with a large, hair-covered creature while driving home from the Arkansas-Oklahoma Fair. The couple saw the creature crouched down on the side of the road approximately one mile north of Mansfield, Arkansas. As the couple passed the figure, it stood up and walked away. The wife described it as over 6 feet tall, covered in black hair, and weighing somewhere between 400-500 pounds (Bord & Bord, 2006). In 2004, near Atlanta, Texas, in Cass County—the Texas county adjacent to and immediately west of Miller County, Arkansas—while driving at night on Highway 59, a truck-driver reported seeing a “large hairy creature” step over a barbed wire fence (Blackburn, 2012).

Photographs



Figure 1: The “Overwatch Tent,” constructed of a canopy tent and black polyethylene trash bags for walls, a crude but effective tool for concealed observation while using thermal optics. Photograph: Chris Buntentbah.



Figure 2: Inside the Overwatch Tent: Two swivel chairs with Sako .338 Lapua (left) and Marlin 1895 GBL .45-70 (right), both equipped with ATN ThOR 320 60hz thermal scopes. The shemaghs were used to cover the thermal optics and the heads of the team members to guard against face and body illumination. Photo: Alton Higgins.



Figure 3: The ATN ThOR 320 60hz thermal optic. The NAWAC procured two of these thermal optic devices. Photograph: Chris Buntambah.



Figure 4: handheld GSCI TIM-14TTX thermal optic. Photograph: Paul Bowman, Jr.



Figure 5: FLIR Thermosight T-50 thermal scope. Photograph: Paul Bowman, Jr.



Figure 6: Ghost Blinds or mirror blinds use reflective panels that reflect the ground and natural surroundings. Photograph: Rick Hayes.



Figure 7: Reconyx HC600 Hyperfire, with “covert” infrared. Photograph: Chris Buntambah.



Figure 8: Reconyx RC55 Rapidfire game camera. Photograph: Chris Buntentah.



Figure 9: Reconyx RC60 Covert game camera. When the infrared lights trigger, there is no "red glow," thus supposedly making the camera's "covert" illumination undetectable. Photograph: Chris Buntambah.



Figure 10: An array of Plotwatcher Pro time-lapse HD cameras. Photograph: Brian Brown.



Figure 11: Rugged Cams Sentry 700 HD Infrared dome camera. Photograph: Chris Buntenbah.



Figure 12: Rugged Cams 960HD DVR system (Figure 5), with a 20-inch RCA monitor. Photograph: Chris Buntentbah.



Figure 13: TASCAM DR-40 and Sennheiser MKE102S/K6 omni-directional microphone. Photograph: Chris Buntentbah.



Figure 14: Marantz PMD-670 digital audio recorder and Sennheiser MKE102S/K6 omni-directional microphone in Pelican case. Photograph: Chris Buntentah.



Figure 15: NAWAC researchers often struck hardwood trees with baseball bats to elicit kindred responses from the surrounding forest. Photograph: Rick Hayes.



Figure 16: Video still of the downed tree as seen and heard by Bravo team on May 28, 2014. Video still: Phil Burrows.



Figure 17: Ken Stewart of Echo team examines the downed black walnut tree that was, from all appearances, a vibrant and healthy tree. Photo: Alton Higgins.



Figure 18: Another tree fall documented by Alton Higgins. Photograph: Alton Higgins.



Figure 19: A rock on a shed roof.



Figure 20: A soccer ball-sized rock launched down the mountain behind the cabin.



Figure 21: Ken Helmer holds the rock from Figure 17 for size reference.



Figure 22: One rock of many found on the roof of one of the site structures.



Figure 23: Another rock from a rooftop.



Figure 24: On an old RV roof.



Figure 25: This rock broke upon impact on the ground as it struck another rock after having been thrown very close to a NAWAC researcher.



Figure 26: A narrow miss of a solar panel.



Figure 27: A rock from a shed roof.



Figure 28: Rocks striking corrugated metal at night create tremendous noise.



Figure 29: This rock barely missed the overwatch tent.



Figure 30: A rock retrieved from the cabin roof.



Figure 31: More rocks retrieved from the base camp cabin roof after a night of bombardment.



Figure 32: A collection of rocks retrieved from cabin roofs in June 2013.



Figure 33: The track found by tracker Mark McClurkan just yards to the east of where he found the blood spatters on the rocks. Photograph: Mark McClurkan.



Figure 34: The 7-inch track found by Juliet team in August 2011. Photograph: Brian Brown.



Figure 35: Video still of footprint in dry dirt found by Michael Mayes and Daryl Colyer. The track was approximately 14 inches in length. Video still: Michael Mayes.



Figure 36: “Dodger One” nut-crushing station found east of camp. Photograph: Brian Brown.



Figure 37: Close-up of “Dodger One” nut-crushing station found east of camp. Photograph: Brian Brown.



Figure 38: Measurements of “Dodger One” nut-crushing station found east of camp. Photograph: Brian Brown.

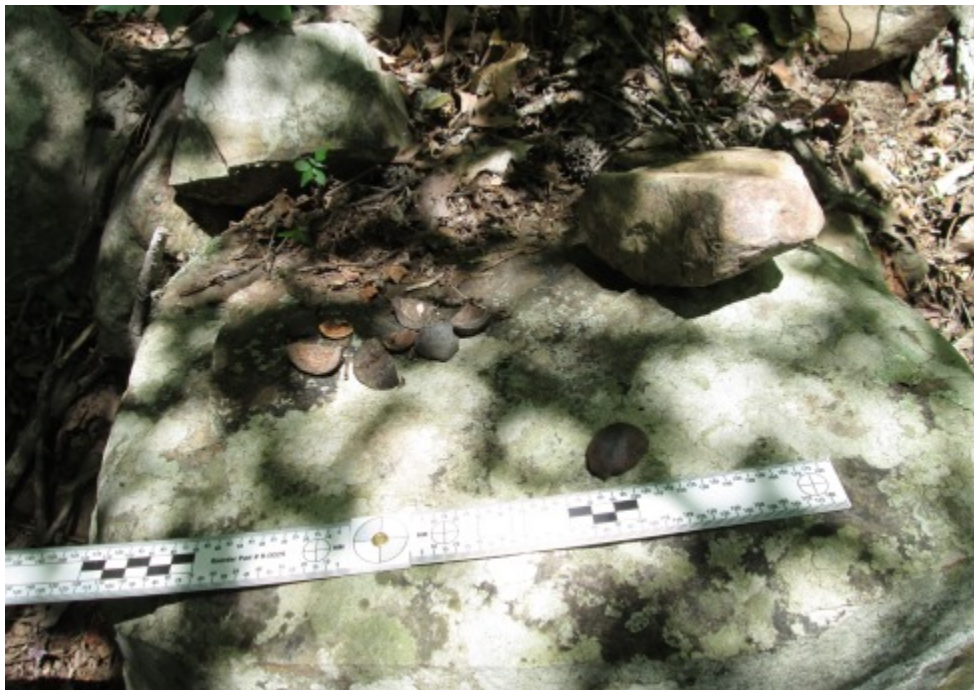


Figure 39: A nut-crushing station found by Travis Lawrence. Photograph: Kathy Strain.



Figure 40: Another view of the nut-crushing station, “Jeremiah 1,” found by Travis Lawrence. Photograph: Kathy Strain.



Figure 41: Blood spatters on rocks in the creek. Photograph: Mark McClurkan.



Figure 42: Blood spatters on rocks in the creek. Photograph: Mark McClurkan.



Figure 43: Blood spatters on rocks in the creek. Photograph: Mark McClurkan.



Figure 44: Blood spatters on rocks in the creek, clearly indicating 000 buckshot wounding. The first two rounds fired at the animal were 000 buckshot. Photograph: Mark McClurkan.



Figure 45: Sample 6. Photograph: Mark McClurkan.



Figure 46: Sample 6. Photograph: Mark McClurkan.



Figure 47: Sample 6. Photograph: Mark McClurkan.

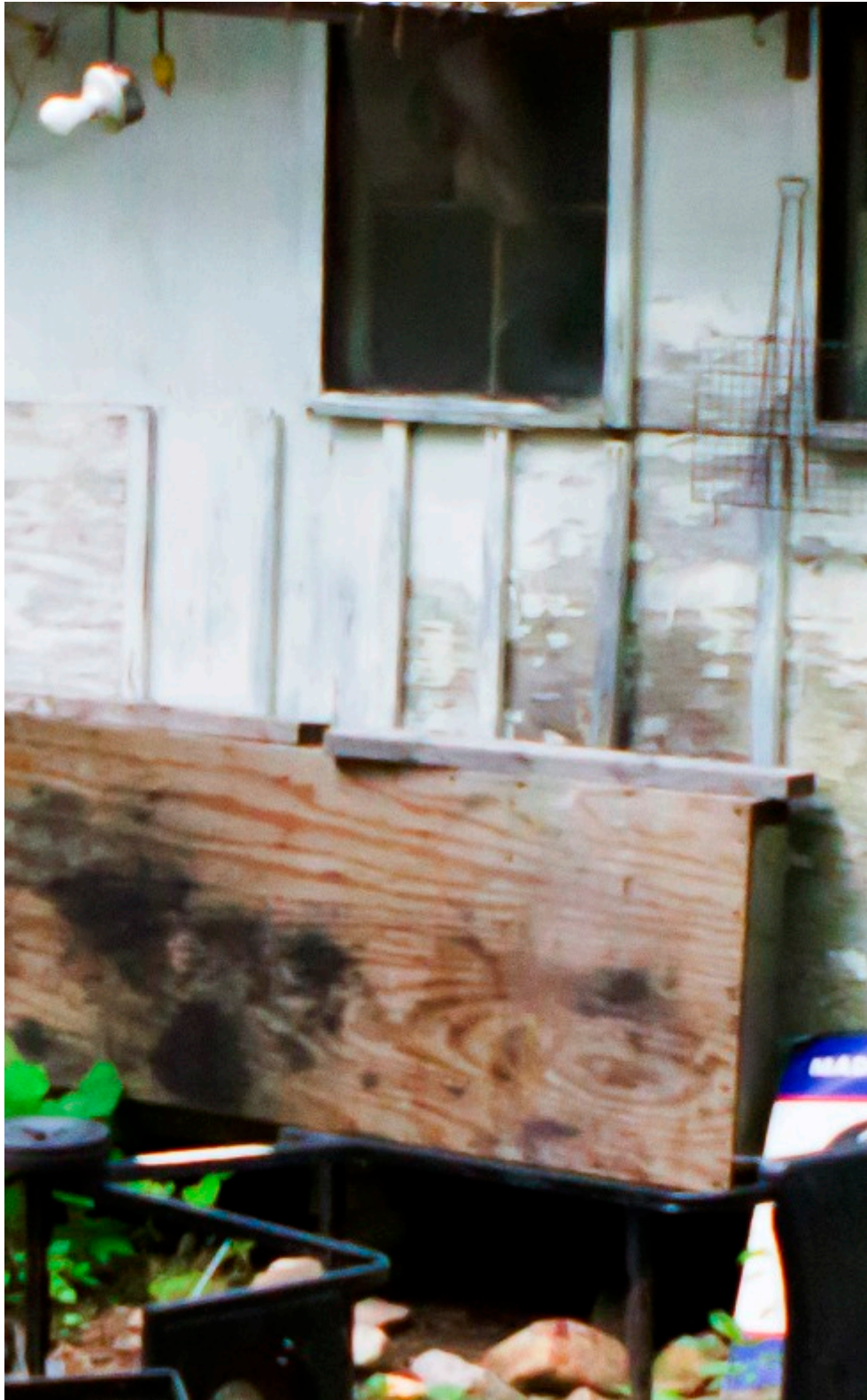


Figure 48: The window where the “sample 6” hair was collected (its lower windowsill is about five feet off the ground).
Photograph: Rick Hayes.



Figure 49: Ken Helmer recreates “the Bright Eyes Incident,” approximating the initial height and position of the subject, and using his fingers to show the distance between the eyes. Paul Bowman’s ATV is where it was when “the Bright Eyes Incident” occurred. Photograph: Rick Hayes.



Figure 50: Helmer’s right hand is the approximate height at which the subject stood before turning to Helmer’s left to flee up the mountain, located about 25 yards away. Helmer is standing at the approximate position of the subject during the initial encounter. Photograph: Rick Hayes.



Figure 51: This photograph presents Daryl Colyer's vantage point when he observed "Old Gray" in May 2012. The red arrow points to the huge boulder onto which Old Gray stepped before it took a giant step up onto the bank (yellow arrow) and then disappeared into the foliage. Photograph: Rick Hayes.

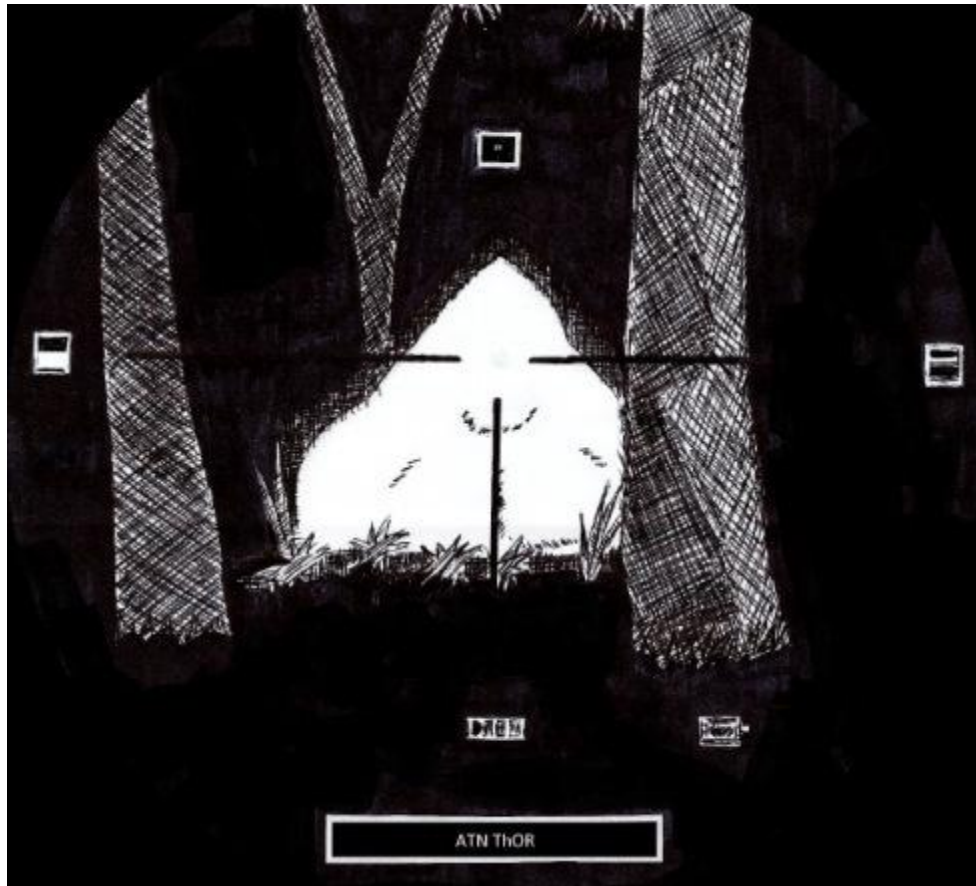


Figure 52: This sketch by Shannon Graham approximates the view as seen by Travis Lawrence through the ATN ThOR Thermal Scope near Alton Higgins's tent. Using the ATN scope, Lawrence was not able to see that a small one-quarter-inch branch was positioned right where he placed the center of the reticle.



Figure 53: The “clipped branch” that deflected Travis Lawrence’s round. Photograph: Alton Higgins.

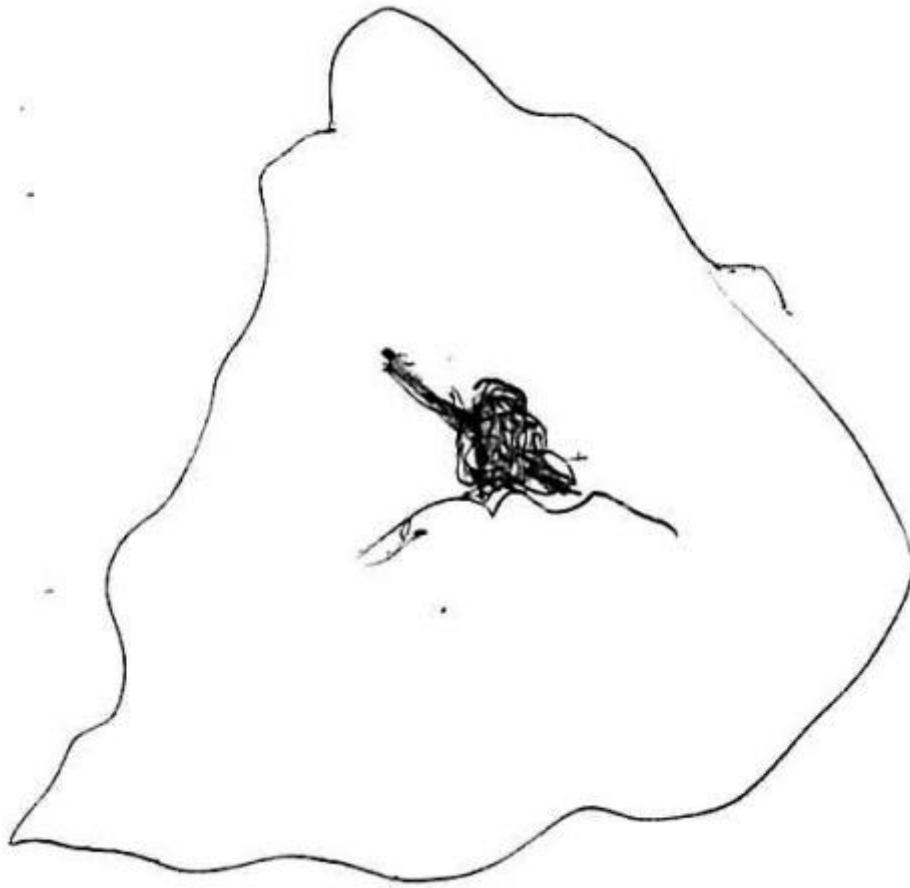


Figure 54: Jordan Horstman's sketch of what he believes was a baby wood ape coming down from a tree as it held a branch with one arm.

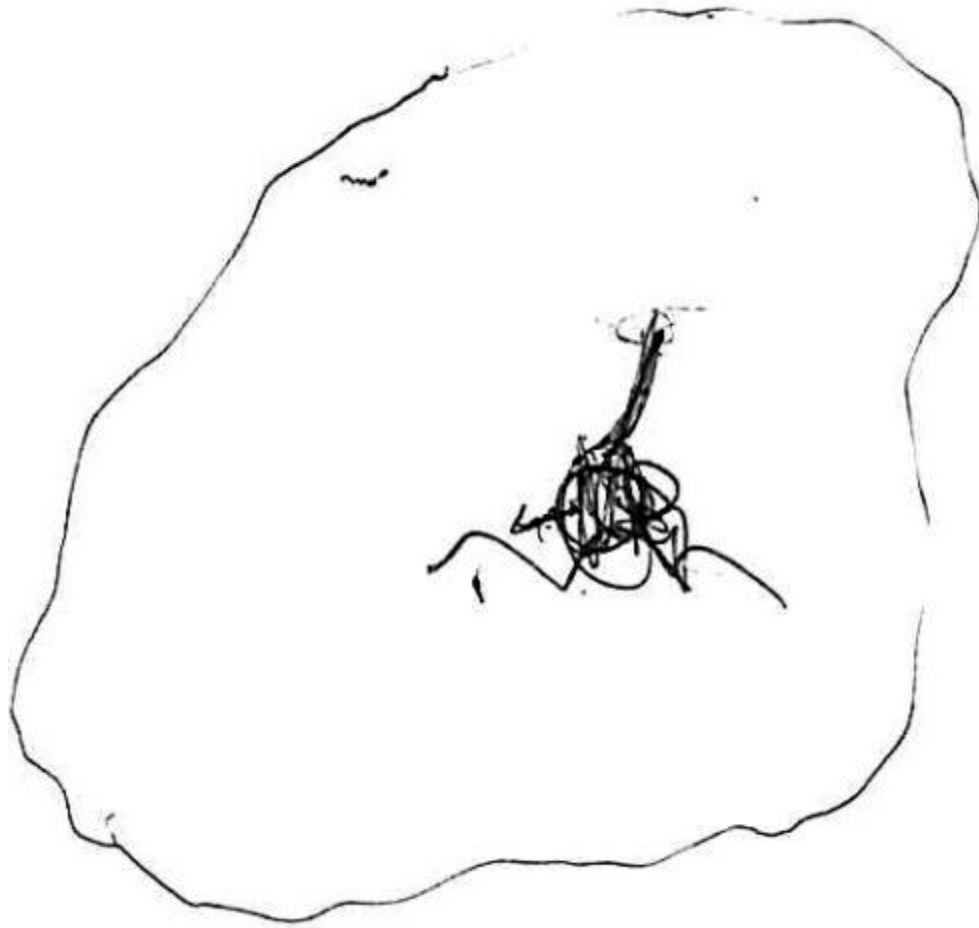


Figure 55: Horstman's sketch of the small black animal as it swung while holding onto the branch with one arm.

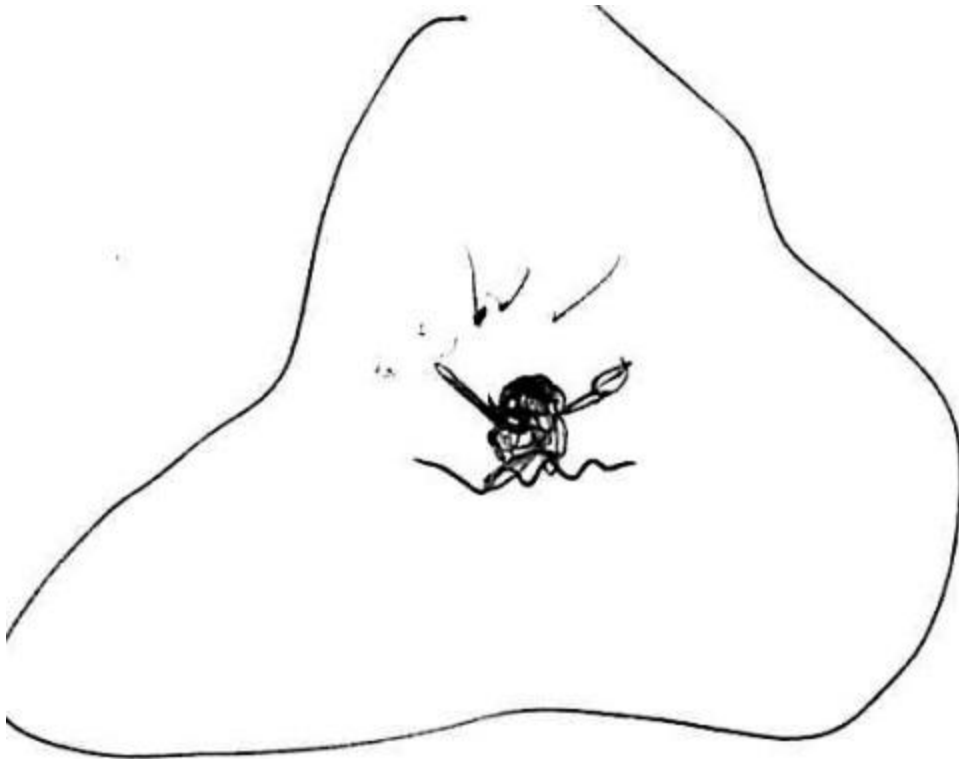


Figure 56: Horstman's sketch of the small black animal as it fell a short distance, no more than 2 feet, and then grabbed a branch again with both arms.



Figure 57: One of the surveillance system cameras can obviously be seen in IR illumination mode in this night photo, indicated with the red arrow. Photograph: Chris Buntentbah.

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