

Demystifying the Eastern Massasauga Rattlesnake

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Foreword

The moment we successfully re-frame the way we communicate and share stories on environmental issues, we change the way the public views the environment. My priority in my research lies in filling this recognized need for individuals, communities and organizations who want to share their stories about environmental issues and who want to effectively engage people to foster change in order to find a way to better communicate environmental messages to the general public, which work towards conservation and sustainability. My interest further lies in exploring whether art and media can play a role in alleviating fears and misconceptions people might have towards nature and/or certain non-human animals. Through my field experience with the Toronto Zoo's Adopt-A-Pond experience-based outreach workshops in Toronto, Canada, I gained an understanding of whether experience-based outreach programs have a lasting positive impact on the participants as well as a hands-on understanding of the social and cultural factors that play towards biodiversity conservation. However, I strongly believe we need to give individuals strategic, effective and valuable environmental knowledge to change their behavior towards the environment in a sustainable manner.

In my research I wanted to understand the elements of compelling storytelling and to see how forms of digital storytelling incorporated with environmental education can help organizations, such as the Toronto Zoo, deal with social and environmental issues and advance their conservation mission. The main focus of environmental education programs has been to change environmental behavior through increasing environmental knowledge. For my research project, I wanted to develop visual communication and storytelling skills to inspire and motivate people to act, or even take interest, on environmental and social issues through the tradition of storytelling. Today we live in such an interconnected digital world that I strongly believe in the necessity to integrate storytelling, science and environmental issues in a way to effectively communicate local and global environmental issues to the general public at the grassroots level. We need to give individuals strategic, effective and valuable environmental knowledge to change their behavior towards the environment in a sustainable manner.

Abstract

The Eastern Massasauga rattlesnake (*Sistrurus catenatus*), Ontario's only extant venomous snake, has suffered from the overall negative image of snakes created by centuries of traditional storytelling and more recently, mainstream media. Snakes in such media have often been portrayed as evil and dangerous creatures. This paper will examine whether non-fictional visual storytelling can be and should be used as a way of dismantling the misconceptions people might have of rattlesnakes, particularly the Eastern Massasauga rattlesnake (EMR). The Toronto Zoo conducts annual EMR workshops, a traditional form of environmental education, in hopes of trying to dispel the myths, stories and legends that have surrounded these rattlesnakes for decades. Alongside Toronto Zoo's Adopt-A-Pond wetland conservation programme, we produced a short non-fictional educational film on the EMR and are now incorporating this film into the workshops in hopes to further the conservation messaging. This is the case study for this paper, as my research is concerned with the urgency of integrating visual storytelling to benefit wildlife conservation messaging, especially focusing on the Eastern Massasauga rattlesnake found in Ontario, Canada. This paper will contribute to our understanding of popular media depictions of snakes, as well as add to the existing literature about Disney animated films influence on our imaginations. This paper explores how the portrayal of snakes has been shaped by popular mass media, particularly through present-day Disney animated films and how conservation-based communities should respond in reducing such misconceptions that have risen in our modern societies, especially in children, over the years. My research will conclude by emphasizing on how art & digital media should be used as an educational tool for conservation concerns, causes and organizations such as the Toronto Zoo's Adopt-A-Pond wetland conservation programme.

Introduction

Storytelling is a medium of communication probably as old as mankind itself. Humans have a remarkable and universal capacity to create, tell and process stories (Sugiyama, 2001). Stories, delivered through all existing media teach us universal facts about the world, influence our moral logic and mark us with fears, hopes and anxieties that have the potential to alter our behavior, even on a subconscious level (Gottschall, 2012). Storytelling has been a primary sculpting force to shape individuals & societies, in possibly all cultures around the world (Gottschall, 2012). When we experience a story, we allow ourselves to be deeply occupied by the storyteller for that specific moment in time. Jonathan Gottschall quotes in his book, 'The Storytelling Animal', that story is for humans as water is for fish. It is in our nature to tell stories. Storytelling, whether factual or fictional, is a deep-rooted human characteristic. However, the way we communicate with others has transformed dramatically over the centuries. The origins of storytelling date back to visual stories, such as cave drawings, which then shifted to oral storytelling, in which stories were passed down from generation to generation by word of mouth. However, with the technologies that we have today, the way we tell stories and keep ourselves informed has shifted to a more all-encompassing experience.

Snakes, as seen in our media, have long been portrayed as evil, cold-blooded creatures and are thus mercilessly persecuted on the basis of fear and misunderstanding. Such negative attitudes toward snakes may be the biggest barrier to their conservation status because it often impedes efforts to address other threats. From the temptation of Eve to the venomous murder of the mighty Thor, snakes have appeared as a figure of mischief and misery. The global status of snakes in religion, myth, and folklore underscores our deep-rooted connection to this misunderstood creature. The fear of snakes is called ophiophobia, which is apparently a subset of herpetophobia, the more inclusive fear of reptiles. Truthfully the fear of snakes is one of the most common worldwide phobias, yet I am sure the majority of the human population, especially the urban population in the city of Toronto, Canada, probably have not had the chance to encounter or experience a live 'wild' snake in person. Research has shown however that while babies and very young children do not usually fear snakes, they are unusually skilled at detecting them and show a predisposition to learn to fear snakes if they are exposed to negative portrayals

of them in the media (LoBue, 2008). So, it begs the question: where might this fear come from and why are snakes such a common target of evil and fear in stories, culture & media?

Truth be told, during my childhood my only interaction with snakes was through media, usually through nature shows and documentaries on channels such as Nat Geo Wild or through mainstream films such as Anaconda, Harry Potter and several Disney films such as Aladdin, where unfortunately snakes were consistently portrayed as slithering dangerous creatures. Still I never had any repulsive adverse reactions when a snake would appear on the screen, unless a family member or friend, usually my mother or grandmother would say, “Uff Fatima, why are you watching such horrible things on our television, please change the channel!” or “Fatima, why would you bring such evil nonsense in this house, switch the television off!” As I grew older, I became beyond fascinated with all these hostile reactions my family and friends would have towards snakes, and when I would question their feelings, they would just repeat, “Fatima! I just don’t like them, they are bad and I don’t like seeing them!” To me, that did not justify their horrified reactions towards snakes, and for some reason, I felt defeated. Having an inner fondness and fascination towards all creatures, I never understood my family’s feelings towards snakes and they never understood mine. Nonetheless, no matter how hard I tried to convince them otherwise, we never saw eye-to-eye on this matter. I kept thinking to myself if only there was another way in which I could influence my family to not think so negatively on snakes but whatever I tried, it failed. Perhaps it was the way I was communicating with my friends and family? Perhaps it was the way I was telling the story? Maybe I was not telling the story well enough to convince them that snakes are not evil and disgusting creatures? Maybe I had to change my ways of communicating my message on snakes ...

It was not until early 2015, while I was working as a “hands-on” volunteer facilitator in the Schad Gallery of Biodiversity at the Royal Ontario Museum, when I came across an elderly man who had a remarkable knack for storytelling. As part of my job, I had to interact directly with the public to actively engage museum visitors about the diversity of life on the planet and the challenges facing its conservation, when I met a man in his late 70’s, who gave me a wonderful anecdote about the Eastern Massasauga rattlesnake. The conversation started when he approached me to inform me that he really liked the hairband I was wearing and was curious to

know where he could purchase one just like it for his granddaughter, who was busy admiring the Madagascar cockroaches on display. Regrettably I told him that it had belonged to my mother, however, the conversation led to the topic of our mutual admiration of snakes as my hair band had a snake-like pattern designed onto it. Eventually our discussion led him to ask me where I was originally from, to which I responded India. I was born in New Delhi, India and moved to Toronto in 2010. “What brought you to Canada?” he asked. Teasingly I replied, “Well I heard the people are really friendly and welcoming so I decided to study abroad here.” As we were coming to the end of our conversation he left me with a short story. He said, in his wavering elderly voice, “Well I guarantee you that we Canadians are as friendly as our rattlesnakes. If you keep a safe distance, we will do you no harm. If you come closer, we might rattle a little. If you come even closer, our rattle will definitely get louder and stronger but if you come too close, then you’re only looking for trouble dear. Be safe and good luck on your future endeavours.” And with that he left the gallery holding his grand-daughter’s hand, while I pondered on the importance of his short story.

The Rise of Motion Pictures and The Disney Franchise

Starting from around the year 1800, technology has contributed to the creation of telephones, radio, television, motion pictures, digital media & most recently mobile media. This is intriguing because technology has given us the ability to practice our intrinsic nature as visual individuals. Over the past decades, television became one of the most dominating forms of media in a majority of societies around the world. In 1872, Edward Muybridge created the first true “motion picture” by placing twelve cameras on a racetrack and rigging the cameras to capture shots in a quick sequence as a horse crossed in front of their lenses. The 1900s was a time of great advancement for film and motion picture technology. Exploration into editing, backdrops, and visual flow motivated aspiring filmmakers to push into new creative territory. After World War I ended, the United States ushered into a cultural boom and a new industry center was on the rise: Hollywood, the home of motion pictures in America. But it was not until the 1920s that the movie industry began to flourish. With hundreds of movies being made each year from that point on, Hollywood alone was considered a cultural icon emphasizing leisure & luxury. The earliest and most affluent film companies were Warner Brothers Pictures, Paramount, Metro Goldwin

Meyer, and 20th Century Fox, each of whom owned their own film production sets and studios. In the post-war United States, the average family grew in affluence, which created new societal trends, advances in music, and the rise of pop culture – particularly the introduction of television sets. By 1950, an estimated 10 million homes owned a television set which meant families could now bring their cinematic experiences back home with them, not only the creative product but the underlying ideologies as well. At this time, Disney was labeled third-tier.

Today, however reads a very different story for the Disney franchise. It is evident that Disney is recognized and known around the world and one would probably have to go to great lengths to find someone who has never heard of, or is unable to recognize Disney in one way or another. Disney has probably been one of the most significant factors influencing pop culture in the last few decades. Whether it is movies, books, stuffed animals or theme parks, Disney seems to be everywhere. However, it was not always a success for the man who started it all, Mr. Walter Disney. Walter Disney fought hard and long to get to where Disney is now, a global cultural icon. Walter Disney advanced the technology in the animation industry like no other, leading to one of his first biggest successes, Snow White in 1937. Since then Disney has produced over a hundred animated projects, some becoming enormous successes such as The Jungle Book, Beauty and the Beast & The Lion King, just to name just a few. Disney has been a cultural juggernaut for a long time and growing up, Disney's early films were my cultural influencers, as I am sure they were to many young children at the time. Reflecting back to my own upbringing, my entire childhood was spent watching Disney animated films and nature shows. There is no denying that Disney taught me life lessons of family, love, forgiveness, empathy and the importance of dreaming big and never giving up. From a young age, I had witnessed domestic violence from my father and at school, I was bullied by my peers for the way I looked and behaved. Going through some difficult situations at such a young age, I would often resort to my television at home for comfort in order to escape what was going on around my life. From a very young age, I made myself believe that all my friends were those Disney characters on my television screen at home. Disney became my way of understanding the world around me. It gave me a sense of home and belonging, and that is why Disney animated films are so much more than just entertainment to me. However, now as an adult I understand the impact that the Disney franchise has had on me, socially, psychologically and emotionally. In fact, there has been numerous researches done on how Disney has impacted a child's understanding of the world.

Many have written on how digital entertainment has the potential to give a child insight on life values that are essential to a child's upbringing. "The negative psychological effects are insurmountable when it comes to how Disney affects a child's development on the basis of growth, play and identity administration" (Bell et al., 1995; Giroux, 2011; Tonn, 2008). According to Canadian psychologist Albert Bandura's research (Kohlberg, 1981) what children observe, they convey further through their behaviors and attitudes about people and the environment. They build their personal characters and morals by what they see and learn around them (Baouraki, 2016). It has been criticized that the mysticism that Disney portrays interjects 'stereotypical messages' on race, class and gender and so, there has been an emphasis on parental viewership, as such concepts are being introduced to children at a very young age through the medium of animated films (Binkley, 2016).

Disney Films Influence on Children's Imaginations

It's no secret that very young children learn by watching the world around them. Babies, toddlers & preschoolers discover their surroundings by observing the adults closest to them, even when those adults aren't intentionally trying to teach them anything. As children get older, they identify with parents and other significant adults and begin to model their behaviours after those with whom they form relationships, people who they love and admire. Today, we live in an age where technology and media, such as tablets, smartphones and laptops, have become an integral part of our daily lives and are often used to aid our children's ongoing learning and development. Much research has been done on this increased reliance on interactive technology, especially on the consequences it can have on a child's upbringing. According to one study published by the Joan Ganz Cooney Centre in New York (2011) which specializes in children's media, mobile media appears to be the next "it" technology, from hand-held video games to portable music players to cell phones. Kids like to use their media on the go. A study done by the Kaiser Foundation study in 2010 showed that youths in the United States spent more than seven and a half hours a day on digital media. Such technology has emerged as a powerful teaching and learning tool in families where it has been reported that at least one in three children, aged two to four, own a tablet or a similar device and spend more than five hours on average using such digital devices every day (Kaiser Foundation, 2010). "According to neuro therapist and doctor of psychology, Mari Swingle, we're starting to notice changes in early

learning and development as a result of our increased reliance on interactive technology" (National Post, 2016).

The more entertaining and interactive the media is, the more the children will remember it and use what they remember in what they say to people or how they behave within different circumstances. With Disney, there is a fine line between entertainment and pedagogy. Early on, Disney had become a standard culmination of children's cultural interests. For example, Mickey Mouse became a cultural icon in the eyes of many children. If Mickey Mouse was seen doing something questionable, the public would immediately react to make sure the animators knew they disagreed and thus demanded the creators make changes. Everyone expected Mickey Mouse to behave appropriately at all times but there is still no doubt that Disney significantly juxtaposes commercial interests with educational enrichment. Sources, as cited within the works of Ajayi (2011) Lugo (2009) and Wohlwend (2012) agree with this note, claiming that "Disney implements various social teachings that provide a child with tools on how to operate within current society, ranging from race to sexual promiscuity, from language to stereotypes." Society demands an identity of children, and Disney serves as an important tool for learning how to "operate within the socio-cultural and historical framework in America," (Ajayi, 2011). When children try to understand what it means to formulate their identity, they look at the most dramatic images they can see as a reference, which most often comes from the childhood entertainment producers prevalent in today's society (Sun and Picker, 2002). I was one of those children that grew up with television being the most prevalent forms of entertainment and education in my household. I remember how Toy Story, released in 1995, changed the way I looked at inanimate objects. I believed in the fact that toys came to life when humans were not around. I would make sure my own toys at home were in a comfortable environment, that they had access to food, water etc. I would tell them stories about my day at school, I would have toys sit with us at the dinner table with my family and many other such situations I would create in order for my own toys to live a happy life. Disney made me believe in the impossible. The way I viewed certain people and other animals was also heavily influenced by Disney animated films. Bringing it back to how Disney portrayed snakes in their films, for the longest time I was afraid of snakes. Even though I had not encountered a live snake until 2015, I had an sense of fear towards them, which never made any sense to me. In fact, my entire immediate family had a hatred towards snakes. Perhaps it was genetic?

The media I was consuming as a child, from one angle or another always showed hatred of reptiles and amphibians in general, especially snakes. They were not as appreciated and respected as birds and mammals. Everyone and everything around me displayed a repulsion towards snakes, saying they were slimy and evil creatures that should not be spoken of within the house or near loved ones. This idea of snakes being evil is also subliminally embedded in quite a few Disney animated films and because my upbringing was heavily influenced by Disney stories and characters, I too, was afraid of snakes. The mysticism of Disney magic has swept itself into the everyday lives of society throughout its existence and so the very same can happen in other children's imaginations who have access to such stories, films and media (Binkley, 2016). In the next section I will be providing detailed examples of how Disney has portrayed snakes in their characters, stories and films as evil and villainous creatures.

Portrayal of Snake Characters in Disney Animated Feature Films

From the early 1980s to the late 2000s, Disney released several original movies such as *The Little Mermaid* (1989), *Beauty and the Beast* (1991), *Aladdin* (1992), *The Lion King* (1994), and *Tarzan* (1999), to name a few. The movies from this period have stood out as Disney's best movies where some have even gone to the extent to call this period the "Disney Renaissance." The Disney movies of that time are now considered classic masterpieces, where adults, parents, guardians and educators who grew up in the "Disney Renaissance" play those same movies to their children and young ones, just like when they were children themselves. The legacy of Disney is thus handed down from generation to generation and that is one of many reasons why visual storytelling has become so central in today's world. As we have seen throughout the history of Disney films, many animated non-human animals** (NHAs) have often appeared to have an innocence that makes them particularly appealing to children. They added the hidden Disney magic onto certain animals and anthropomorphized them to create a sense of wonder to their characters. Unfortunately, the depiction of animated Disney snakes did not follow this trend. There has been a tendency in Disney films where some NHAs that aid in the hero/heroine's story arc are invariably cute and friendly characters, whereas characters that support the villain have been distinguished with negative and threatening traits. For the purpose of this paper, and in order to truly see how Disney could have impacted children's perceptions of snakes, four Disney movies will be analyzed and compared that had made an impact on my perception of snakes:

Jungle Book

(1967), *The Robin Hood* (1973), *Aladdin* (1992) & *Hercules* (1997). Each film has an animated snake character involved, some more obvious than others. These movies have been selected based on my own personal familiarities as they were part of my classic Disney movie collection growing up in the 1990s. These movies are also considered to be from the "Disney Renaissance" period.

** Non-human animals: This term is used in many critical animal studies as a way of reconciling the apparent distinction between the human and the non-human realms.

Kaa - *The Jungle Book* (1967)



Source: <https://animationscreencaps.com/>

“Shut your eyes and trust in me” was the infamous phrase from the character Kaa, the hypnotic python from ‘The Jungle Book’ in 1967. Interestingly enough, in Rudyard Kipling's original novel, Kaa is actually one of the protagonists and a trusted friend to the rest of the characters in the story. There has been no official reason as to why Disney, when producing the film, tainted Kaa as the secondary antagonist, though some have suggested that popular perceptions of snakes at that time heavily influenced this change of character. Ten minutes into Disney’s ‘The Jungle Book’, Kaa makes his first appearance. Mowgli is escaping the jungles because of Sher Khan’s return, the main antagonist of this film. During his escape, Bhageera, Mowgli’s guardian, asks Mowgli to get some rest on a tree for the night. This is when Kaa comes out from the top of the tree, eyeing Mowgli as prey, a main difference from the book to the big screen. In the animated film, Kaa shows interest in eating Mowgli. Using his hypnosis power, he attempts to put Mowgli in a trance, allowing him to tightly secure the boy into his grasp, when in reality, a python’s natural diet does not even consist of humans, playing into the stereotype often portrayed where snakes are wanting to chase humans and devour them as prey. Throughout the movie, Kaa’s real food is never really portrayed giving the illusion that all snakes target and consume only humans,

thus further advancing the fear of snakes in the audience's minds. In fact, a typical Indian python's diet consists of small mammals, birds, or even fish.



Source: <https://animationscreencaps.com/>

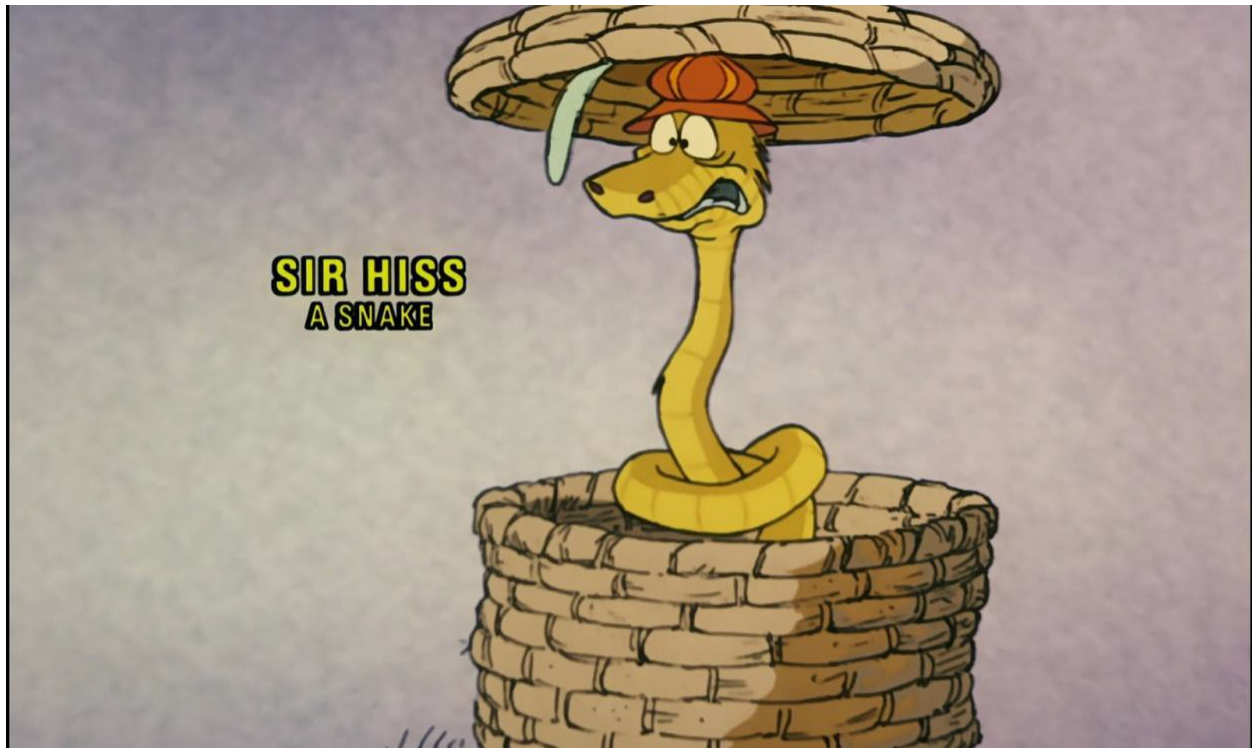
In the real world, we know that snakes have evolved to not have limbs or sharp claws to subdue their prey. Snakes, like cobras and vipers, use their limited venom to kill, while a few are able to swallow their prey whole and alive. However constricting snakes like pythons, which our character Kaa happens to be, overpower and asphyxiate prey. Their muscular strength happens to become the weapon at their disposal. Both pythons and boa constrictors strike, bite and hold their prey and firmly coil around the animal, asphyxiating and sometimes causing cardiac arrest thus eventually leading to the prey's demise. The coiling technique by Kaa can be seen in the screenshot of 'The Jungle Book' above. However, this is where Disney's imagination comes into play.



Source: <https://animationscreencaps.com/>

They show Kaa toying with Mowgli by putting him in a hypnotic trance through his eyes, which is not a characteristic we see in pythons, or in any snake around the world. This was something I discovered much later in my childhood, the fact that snakes do not have the ability to hypnotize humans. I remember seeing images of snakes in my colouring books and instead of colouring them, I would take a thick black marker and cross its eyes off in order to protect myself from its hypnotic powers. My perceptions of snakes started from watching 'The Jungle Book' but it wasn't until much later, when I started watching wildlife television shows such as 'Austin Stevens: Snakemaster', that I came to realize that snakes do not have the ability to put humans in any kind of hypnotic trance. Again, with the influence that Disney has had over the globe, I would not be surprised if other children around the world thought the same way as I did about snakes and their "hypnosis powers." The snake in 'The Jungle Book' proved to be a very effective villain in the Disney world, but the question remains whether it was because of its strong character displayed in the movie or because of his snake-like nature and the stereotype that comes with it.

Sir Hiss - Robin Hood (1973)



Source: <https://animationscreencaps.com/>

Sir Hiss is the main antagonist's henchman in Disney's 1973 animated animal-themed adaptation of the legendary story, Robin Hood. Sir Hiss plays the role of an advisor for Prince John in the Disney-adaptation feature film, often warning the prince of the various dangers plotted against him. Prince John was despised by his people as he flaunted his greedy, corrupted and ungrateful charisma throughout the storyline, making him the main antagonist of the film. Sir Hiss is not actually a character out of the original legend of Robin Hood. He was a true original Disney creation. Even though he does not come across as an extremely threatening character, he was still categorized as the 'bad-guy' throughout the feature film.

The fact that Disney chose to portray the main villain's advisor as a snake rather than any other species, illustrates how Disney constructs the association of snakes with traits associated with being evil or villainous. In addition, the terminology used for its character name, Sir Hiss, reflects our cultural conceptions of the species. Snakes are known to hiss when in

danger or when aggravated, but not all the time. Often people have associated their fear of snakes with this particular hissing sound along with the fact that they do not have any external limbs. Throughout history, the image of a non-human animal with no limbs, slithering on the ground while generating a hissing sound is an image most humans are haunted by. In truth, all snakes are physically capable of hissing, but not all snakes will do this, and whether or not a snake will hiss regularly or in any given situation comes down to a variety of factors.



Source: <https://animationscreencaps.com/>

Within the Disney universe, Sir Hiss is often compared to Kaa, from 'The Jungle Book' as they share similar traits, one being the power to put others in a trance. Though not seen as dangerous or threatening as Kaa, Sir Hiss's character is also very conniving and scheming. A trait seen in most snake-like character portrayals throughout mainstream media and stories, once again adding to the stereotypical human-constructed traits of snakes as being manipulative and malicious. However, towards the end of the movie, Disney chooses to show a slightly softer side to Sir Hiss's character. They show him to be shocked when Prince John tells him of his plans of

killing Friar Tuck in order to lure Robin Hood. His shock comes as a conflicting surprise. Throughout the movie Sir Hiss was shown to be a subordinate to the main antagonist, listening to every command from Prince John until they decided to show some degree of morality inside of him when the character, Friar Tuck was arrested to be executed.



Source: <https://animationscreenshots.com/>

Even though Sir Hiss comes across on the more harmless side of snakes, he is still portrayed as the evil character throughout the animated feature. In the end, he and Prince John are sent to prison for their constant conniving schemes by Prince John's older brother, King Richard. For many young children watching 'Robin Hood', Prince John was depicted as the main villain with Sir Hiss playing his sidekick advisor. The fact that Disney chose to portray the main villain's advisor as a snake rather than any other species further illustrates how Disney creates the perception of snakes always being evil and spiteful towards the heroes of the story.

Aladdin (1992)



Source: <https://animationscreencaps.com/>

Aladdin was Disney's most successful film of 1992, grossing over \$504 million worldwide. According to box office records, it is the third highest-grossing traditionally-animated feature worldwide, behind 'The Lion King' and 'The Simpsons Movie'. Aladdin tells the story of a young man in the Middle East, who falls in love with the Sultan's daughter and befriends a genie as he seeks for something larger in his life. Aladdin quickly became renowned for its most villainous character, Jafar, one of the key primary villains from the Disney universe. Bent on overtaking the kingdom, his character actually served as the royal advisor for the Sultan of Agrabah, making Jafar the second most powerful influence in the kingdom. Throughout the film, Jafar presents himself as a charismatic personality, however he secretly holds everyone around him, in the Kingdom of Agrabah, in contempt. Jafar persistently controls the Sultan by means of hypnotizing him with his mystic snake-headed staff, which he always carries with him.



Source: <https://animationscreencaps.com/>

Jafar's character comes across as an unprincipled psychopath, who will not hesitate to destroy anyone he perceives as a threat to his own sinister designs. Unlike Kaa and Sir Hiss, Jafar is not a snake himself. At least not until the final arc of the film where Aladdin is trying to protect the Sultan and his daughter, Jasmine, to save the Kingdom of Agrabah from Jafar's perils. Jafar often displays narcissistic tendencies with his obsessive desire for power and sense of entitlement, clearly marking Jafar the most ruthless villain Disney has created thus far. He is always seen carrying his gold, ruby-eyed cobra headed staff which he uses for his wizardry. At times the staff is seen with an open fanged-mouth that fires beams of magic on command. Similar to Kaa (*The Jungle Book*) and Sir Hiss (*Robin Hood*), Disney has once again emphasized the make-believe hypnotic powers of snakes. The cobra headed staff also is shown to have powers of conjuration, transformation and telekinesis, which are all fictitious deceptive traits not seen in any snake species.

Again, growing up with *Aladdin* as one of the prime Disney feature films in the 1990s, I believed in snakes having hypnotic abilities. Jafar's cobra-headed staff stamped another mark of confirmation in my juvenile brain that all snakes have the ability to put me in a trance and devour

me whole. There was a time I remember getting a Jafar figure-toy from my McDonalds 'Happy Meal' purchase, and I immediately threw it into the garbage to avoid getting my family hypnotized and killed. That is the influential power Disney can have on children's imaginations. Of course, many will react differently depending on the level of engrossment with such movies but on some scale or another, Disney has definitely impacted people's perceptions of snakes as being evil. During the final climax of the movie, where Jasmine and the Sultan were seen captured, Jafar asks the Genie to make him the most powerful sorcerer in the world, thus giving him shapeshifting abilities and much more.



Source: <https://animationscreencaps.com/>

With his new mystic abilities, Jafar then transforms himself into a giant orange and black cobra with striking red eyes and red stripes on his back, in hopes of finally defeating Aladdin. Everything about Snake Jafar is exaggerated. First of all, no venomous snakes can get that large. In fact, King cobras, the longest of all venomous snakes, can reach up to approximately 18 feet long, so Snake Jafar is an extreme exaggeration to how large snakes can get. It's been noted that the colour red gives humans the illusion of danger. Red is the color of blood which can heighten

our perception of danger just by glancing over it, so it was logically the most likely choice for Disney to add red to Snake Jafar's character. Even the English language tells us that 'seeing red' is bad. Studies have also revealed that red is associated with aggression and dominance in NHAs such as primates and birds, indicating the colour red's aggressive and intimidating character might potentially also be innate from birth.

Similarly, in our visual culture history, jagged shapes such as triangles and diamonds have been used as warning signs. For example, on our highways, the shape of road signs is one of the functionality features that communicates important information to consumers, both drivers and pedestrians, in a micro-glance. Most caution road signs around the world are in either triangle or diamond shapes. Likewise, seeing pointed shapes on Snake Jafar's body implies a sense of danger to its audiences, adding to the menacing factor of the cobra-like villain. Everything about Snake Jafar's character cries out-right dangerous.



Source: <https://animationscreencaps.com/>

Another misconception engendered by Snake Jafar is that all snakes constrict their prey. Snake Jafar happens to be a giant cobra that should have used its venom to kill. Only non-venomous snakes like boas and pythons grab their prey and constrict them to death.

In fact, cobras are not particularly muscular and their fangs are relatively small. Another exaggeration done by Disney where they decided to animate Snake Jafar with enormous sharp fangs. For those who have been influenced by such Disney films and characters, it might be difficult to believe that most snakes around the world, venomous and non-venomous, are in fact timid and shy unless provoked. Eventually in the feature film however, Jafar's excessive thirst for power ultimately leads to his defeat. His pursuit to obtain definitive authority causes him to act on impulse, which in turn leaves him vulnerable to manipulation by Aladdin during the final climax of the film.

Hercules (1997)



Source: <https://animationscreencaps.com/>

Personally, another highly influential Disney movie was Hercules (1997). By this time, I was old enough to attend kindergarten. Hercules was the first Disney movie I watched on the big screen. I remember the enthusiasm I felt when Amma, my mother, told me that we were going to go to the cinema to watch Hercules with another family friend of ours. The songs, the story and the characters made Hercules one of my favourite Disney movies growing up. Certain moments in

the film stuck in my memory for a long time, one of them being the moment when Panic & Pain, the secondary antagonists to Hades, tried to capture baby Hercules from the arms of an innocent and concerned elderly couple who had taken Hercules into their care. Sitting in the darkness of the theatre as a 5-year-old, I remember feeling scared, angry and helpless. I was not able to warn baby Hercules of those menaces, especially when they had shape-shifted into snake like creatures. I remember my hatred towards snakes drastically rose at this time of my life.



Source: <https://animationscreencaps.com/>

Though Panic & Pain appeared as snakes for only a few minutes during the entire feature film, it was the build-up of that scene that made them appear malicious as snakes. Panic & Pain, in their snake-like form, had crept out from behind the shadows onto the innocent elderly family, portraying humans as targets for ambush predators once again. Interestingly, Pain actually had transformed himself into a rattlesnake, as seen from the image provided above. This solidified the misconception in me that all snakes target humans as prey, which in reality that is not the case. However, that was enough to rile me up to start believing that all snake-like creatures in Disney movies and in real life are indeed evil and out there to attack all humans. Luckily for the elderly couple, Hercules, being the almighty powerful son of Zeus, had saved them from the

snake attack by Panic & Pain, verifying Hercules as being the hero and Panic & Pain as being the villains.

Discussion

Giroux, as cited in Sun and Picker (2002), stated that Disney has the capacity to distribute their messages to millions of children, and it is because of this power that Giroux demands the company be accountable for such influence. Since the 1930s, Disney has filled the world's imaginations with anthropomorphized NHAs, their stereotypes and fictional stories. Starting with the infamous Mickey Mouse to anthropomorphized NHAs characters such as Dumbo, Bambi and Simba from the Lion King, there is no doubt that the Disney franchise, through their gendered, ethnic, and racialized identities have taught their adoring audience, mostly children, the important lessons about the Western world view and its dominant suppositions. I have provided a few examples of how Disney movies, time and time again, have framed snakes or even the idea of snakes as malicious towards human beings. There is no denying that the role of anthropomorphized NHAs seen throughout Disney animated films has played a key role in embedding certain cultural frames in our minds towards those NHAs and nature as a whole, especially in the minds of younger children. Disney's reach into the lives of children is unsurpassed by any other media conglomerate, thereby giving it an unparalleled opportunity to shape children's and adults' views of their world. Disney seems particularly adept at creating experiences that both shape and match consumer expectations. According to Randy Malamud (2012), "When we appraise the human experience of non-human animals in visual culture, this keen visual presence overwrites the animal's actual nature and fixes them all the more firmly in a frame." Generally, throughout our history, snakes have been fixed to be framed as malicious, slimy and hostile towards the human species. But whether humans have an innate fear of snakes is an ongoing debate.

Some believe that humans may have inherited an innate evolved tendency to associate snakes with fear (Souchet and Aubret, 2016). The tendency of some individuals to be afraid of certain threat signals, like sharp edges or certain colours and shapes, would have evolved in mammals, creating an innate disposition to the acquisition of this fear (Souchet and Aubret, 2016).

Venomous snakes such as the Eastern Massasauga rattlesnake, may have contributed to survival instincts of early humans and primates (Souchet and Aubret, 2016). While such predators need to be invisible to their prey, they evolved a number of traits to either deter potential predators or to avoid being trampled, such as warning or aposematic signals such as patterns, colours, shape, behaviour, odours and sounds (Souchet and Aubret, 2016). However, the dislike, or fear of snakes can potentially also be an acquired trait. “While babies and very young children do not usually fear snakes, they are unusually skilled at detecting them and show a predisposition to learn to fear snakes if they have bad experiences or even if they are exposed to negative portrayals of them in the media” (Souchet and Aubret, 2016). The act of seeing a snake, whether in the wild, on television or at the zoo, may be immediately referenced against what one has heard, read or seen about snakes. This makes factual storytelling even more crucial for wildlife conservationists, biologists, scientists and educators when trying to educate the public about stereotyped species such as snakes.

For as long as we have records of human culture, we have had animals in human culture, and we have used animals in human culture. Cultural media are becoming omnipresent in today’s world: they are more powerful, faster, cheaper, thus becoming more of a fixture in our lives. We are the way we are because we have created and accepted a set of framed cultural depictions that represent our place in the world in relation to our surroundings, other species and the environment as a whole. However, throughout our history of visual culture, the way humans have framed NHAs has inherently been biased and self-serving. And what happens to any animal once it’s been framed? That animal is made visible. This happens representationally more often than literally. It is certainly possible that in our visual culture, the representational framing of certain animals becomes the norm and thus more prominent in our minds than the literal physical animals we share this planet with. For example, the way snakes have been framed throughout our visual media in the West has greatly affected our literal relationships with them in the real world. If we are consistently shown representations of snakes as evil and malicious, then there is no doubt that we will have the negative perceptions that we do have today towards snakes, which brings us to the matter of why snakes have not been shown otherwise in modern media.

The negative depictions of snakes in religion, myth, folklore and visual media underscores our deep connection to this misunderstood creature, making the fear of snakes one of the most common fears shared amongst all peoples around the world. This fear is called ophidiophobia, which is a subset of herpetophobia, the more inclusive fear of reptiles. Knowing that the fear of snakes is one of the most common worldwide phobias, I am sure majority of the human population, specifically the urban population in the city of Toronto, Canada, probably have not had the chance to encounter or experience a live ‘wild’ snake in person. Luckily now researchers, biologists and environmental educators have enough scientific and anecdotal evidence to show the world that not all snakes are dangerous or malicious towards humans. However, since the misconceptions that filter through our visual-cultural experiences eventually become strongly embedded and perceived as facts leading to harmful actions and behaviours, there is now an urgency, more than ever, for wildlife conservation organizations, individuals and communities, locally and globally, to incorporate non-fictional visual storytelling into wildlife conservation messaging and protocols in order to deconstruct certain misconceptions and fears. This paper will add a unique perspective to the existing literature about the power of incorporating non-fictional visual storytelling for wildlife conservation organizations in order to abolish such misconceptions and stereotypical views in the public’s eyes. Using the case study of the Eastern Massasauga rattlesnake and the literature used above for discussing Disney’s discourses on anthropomorphized snakes, the next chapter will extend the dialogue to examine why non-fictional visual storytelling can be and should be used as a way of dismantling the misconceptions people might have of snakes, focusing particularly on the Eastern Massasauga rattlesnake.

The Eastern Massasauga Rattlesnake

The Eastern Massasauga rattlesnake, a member of the pit viper family, is Ontario’s only venomous snake and Canada’s only pygmy rattlesnake. They range in size from 47 to 76 cm and are found mostly in Southern Ontario. Being part of the pit viper family, this rattlesnake has a somewhat triangular head and a tail that ends in a small rattle that creates a buzzing sound when the tail shakes. This snake's rattle is made up of loosely interconnected pieces of keratin that knock against each other, creating a rattling or buzzing sound when the tail is shaken.

They usually rattle when threatened or in danger. The rattle is a remarkable evolutionary adaptation, existing only in the America's, allowing the snake to warn others of its presence. According to Jeremy Rouse, from the Ministry of Natural Resources and Forestry in Ontario, anyone who should come across a wild Massasauga rattlesnake should remain calm, and slowly just walk away or around the snake. Due to its shy demeanor, a Massasauga may not always rattle its tail in the presence of people or other predators. Instead it may remain motionless, relying on its concealing camouflage colouration to remain undetected. The rattlesnake's head is relatively wide, with a white stripe and three black stripes extending back from the face towards the neck. The heat sensitive pits between the eyes and nostrils are unique to the pit vipers and are used to find warm-blooded prey through a large and highly sensitive network of nerve endings. Within 60 cms, this rattlesnake can find the exact location of a warm-blooded prey species even in complete darkness.



Source: 'Living with Wildlife: The Massasauga Rattlesnake' - Fatima Ali

The Eastern Massasauga rattlesnake venom consists of toxic proteins and digestive enzymes. The venom of the rattlesnake serves two main purposes. One is to kill the prey, mainly small rodents. Secondly, it's to begin a preliminary breakdown of the prey's tissue for easier digestion. However, though the Massasauga is Ontario's only venomous snake, no one has died from a

Massasauga bite in Ontario for over 50 years. According to Dr. Terence Fargher of the West Parry Sound Health Centre, Massasauga Rattlesnake Provincial Antivenom Depot, in Ontario:

“When somebody is bitten by a Massasauga rattlesnake, they shouldn't panic. We haven't had a death from a Massasauga Rattlesnake ever since we have had anti-depot and good anti-venom available to us. It's important that no tourniquet be applied and that no cuts be made to the site and that nobody try to suck on the injection site. The other thing that's important is not to kill the snake or try to catch the snakes so that we can identify it. We have had people bring the snake into the ER in a bucket before and it's really just putting people at risk for another bite.”

The Massasauga is protected by federal and provincial legislation. The Massasauga Rattlesnake was listed as threatened when the Endangered Species Act took effect in 2008. On June 27, 2014, the population was split into two, with the Great Lakes – St. Lawrence population listed as Threatened, and the Carolinian population listed as Endangered.

The most significant threats to the Massasauga are persecution by humans, mortality on roads, and loss of habitats. These threats led to the disappearance of this species from most of its historic range in southwestern Ontario. Unfortunately, the range of the EMR has been dramatically reduced to just four areas: Eastern Georgian Bay area, the Bruce Peninsula, the Wainfleet Bog and the Ojibway Prairie Complex in Windsor. Under the Species at Risk Act, the fine can be as high as \$250,000 and five years in jail if the snake is intentionally killed. In the past decade however, scientific research, such as population surveys and radio tracking, has helped dramatically improve the EMR wildlife management practices across Ontario.

Organizations such as the Adopt-A-Pond Wetland Conservation Program at Toronto Zoo, the Ministry of Natural Resources and Forestry, Parks Canada and the Georgian Bay Biosphere Reserve have all been actively involved in protecting the rattlesnake, its habitat and are consistently involved in disseminating their messaging to the general public, especially those living and working within the Massasauga's range, through educational outreach programs.

However, according to Crystal Robertson, from the Adopt-A-Pond Wetland Conservation Program, most people living in Southern Ontario still don't know very much about this snake.

“I think the average person probably doesn't know it's here, they know we have snakes in a general sense but they don't know how many, they don't know what kind they are, they just associate snakes with what they see on television and the fact that snakes are kind of around. They don't know that this snake is having trouble, they don't know that these snakes are threatened or endangered, they just think rattlesnakes are just their own thing and they're fine and they are something that we don't need to worry about in that larger conservation sense, but in fact we do.”



Source: 'Living with Wildlife: The Massasauga Rattlesnake' - Fatima Ali

From Robertson's comment, I would argue that perhaps science-based academic communities and organizations should actively look into using media such as visual storytelling and social media more effectively in order to influence the public with their research, achievements and conservation efforts. After living in Toronto for the past 8 years, personally I can safely say that I have not come across many people who are aware of the EMR presence in Ontario, which is

unfortunate. So, it is only natural for me to beg the question of where the fear of the Eastern Massasauga Rattlesnake comes from. Of course, in today's world, people process information in a biased way, often dependent upon their perceptions of and tolerance for risk. Social and visual media are an ideal environment for building advocacy towards environmental, cultural and social studies. "Communication is central to how we come to know about environmental issues" (Hansen, 2011). Though environmental communication has been present since around for several decades, it is really only in the recent decade that this field is becoming prominent worldwide. Moreover, conservation film making is now increasingly being recognized as a platform for storytelling that empowers conservation and environmental issues. "Framing communication matters in shaping individuals' attitudes and behaviors on a variety of subjects" (Yocco, 2015). I strongly believe that the moment we successfully reframe the way we communicate our environmental issues, we can change the way the public views the environment. With the rise of visual communication and storytelling, people are more likely to act on information presented creatively and visually rather than just written facts alone. That is why scientists, researchers and social leaders need to look at visual communications as part of the science process.

Recently, I got the opportunity to use my camera to produce a short documentary film on the Eastern Massasauga rattlesnake for the Toronto Zoo. The film will be an update of the 'Living with Wildlife: The Massasauga Rattlesnake' DVD that is currently being used by the Adopt-A-Pond wetland conservation program, to spread awareness of the Eastern Massasauga rattlesnake to the general public. Incorporating non-fictional visual storytelling with real hard facts on the EMR through Ontario's researchers, biologists and educators, this film will be used as a method to dispel the misconceptions the public might have about this species-at-risk rattlesnake, thus the name of my project is called 'Demystifying the Eastern Massasauga Rattlesnake.'" Sometimes scientific literature can be difficult or unattractive to those without a professional interest in research. Thankfully we now have the platform for creative control over digital storytelling as a powerful teaching and learning tool that engages both those involved in protecting the species and its habitat and those who simply work or live within its range. We need to use the power of digital storytelling, film and social media to bridge the gap between conservationists, educators and the general public. There is no doubt that with the increasing speed at which everyone is

inundated with information, it is becoming more and more important to find unique ways to stand out. Of course, stories entertain but they can also be used as an educational tool as they transfer knowledge, record history and negotiate understandings. The next section will discuss the significance and urgency of the new and updated 'Living with Wildlife: The Massasauga Rattlesnake' short conservation documentary film that I shot, directed and edited for the Adopt-A-Pond Wetland Conservation Program at the Toronto Zoo as well as the future of conservation wildlife film-making.

Toronto Zoo's 'Living with Wildlife: The Massasauga Rattlesnake' film

“Many people form opinions about science without being fully informed by the scientific knowledge and facts behind the issue, choosing instead to rely on what others believe and value, trust and the frames being used to communicate about the issue” (Yocco, 2015). This is particularly true when it comes to shaping attitudes and behaviours towards science and environmental issues (Yocco, 2015). The moment we successfully reframe the way we communicate environmental issues, we change the way the public views the environment. The stories we hear every day and the way we share environmental issues are important in creating a long-lasting impact. There is no doubt that we have now come to accept that visual communication is a bridge beyond verbal language. Science teaches the need for conservation but often falls short in communicating this fact to the public. In order to achieve sustainability, the general gap between scientific knowledge and public behaviour needs to be bridged through media such as digital storytelling, social media and visual communication. One of the solutions to sustainability and awareness lies in strategically reframing the way environmental challenges are communicated in the real world. “Raising awareness of an issue’s impact on a valued object theoretically results in an individual attempting to mitigate the situation regardless of the issue” (Yocco, 2015). Thus, we need to provide individuals with real, effective and valuable knowledge in order to dispel misconceptions and change their attitudes and behavior towards the EMR in a sustainable manner.



Source: 'Living with Wildlife: The Massasauga Rattlesnake' - Fatima Ali

Andrew Lentini, curator of Amphibians & Reptiles at the Toronto Zoo agrees:

“Knowing more about the Eastern Massasauga rattlesnake will help us protect it because we get away from the myths and the misconceptions and one of the things that really motivates people is concern for their safety and the safety of their pets and their families, and if we can get the message across that they're not looking for confrontations, people may feel more comfortable with them particularly when we show them that that's the case and we can do that through the Eastern Massasauga rattlesnake workshops that we host here at the Toronto Zoo”

A survey conducted by the World Association of Zoos and Aquariums, in collaboration with national and regional zoo and aquarium associations, showed that annually more than 700 million people visit zoos and aquariums worldwide and are thus potentially exposed to environmental education. For most urban populations around the world, “zoos provide an ideal setting for effectively communicating environmental issues to motivate visitor’s behavior” in order for zoos to promote their conservation missions (Yocco, 2015). The zoo, like any cinematic experience, is a space designed with exhibition in mind. It provides the platform for

many to take the time to come and focus on the lives of other creatures. This can help dispel the mind theaters that usually plague us as it is mainly in films and television documentaries that we see animals in their natural settings, but on the screen, they're dwarfed, flattened, animated, interrupted by commercials and most of the time narrated over. No matter how many times you experience animals in their natural settings through a screen, there is nothing like seeing a living creature in the flesh and watching what it does live as you would on screen. As they say, seeing is believing, so seeing an animal right in front of your eyes alone will bring a greater understanding and perspective to many and hopefully give them a greater appreciation for wildlife, conservation efforts and how they can contribute (Lawrence, 2016). Regardless of the worldwide debate over zoos and aquariums, one cannot deny that they are how most people come to know of all the other non-human animals from around the world. Nonetheless, there has been an overall increase in the emphasis for science educators, biologists and conservationists alike to provide video technologies in their class or workshop settings in order to enhance an audience participant's involvement with the information being provided. The study conducted by Sammet et al. (2015) indicates that educational films are a useful method to support workshops that creates the space for hands-on educational activities with living animals. However, "in order to make educational films as motivating as the integration of having living animals" at such workshops, the presenters should design the workshop in ways to allow long-term interest and curiosity of the subject matter. Both interactive video technology and hands-on activities with living animals must be taken into consideration.



Source: 'Living with Wildlife: The Massasauga Rattlesnake' - Fatima Ali

Bob Johnson, Curator Emeritus of amphibians and reptiles at Toronto Zoo says:

“So I think it’s really important to break down some of those barriers so people actually see and witness wildlife, interact with it at the zoo here with its rattle, get information when we hold our Massasauga rattlesnake workshops, educational workshops at the zoo, all the people who go to the workshops, meet a Massasauga rattlesnake in the room they’re in, so they get to see it’s behaviour and how shy it is and it doesn’t run around the room, and that’s important but it’s really important for us to take them on site, see the snake in its naturalistic setting and they’re able to study it, the snake what it wants to do, and its own environment for a period of time so I think the zoo’s display is really important.”

Films have the ability to visually transport people to places and situations they might otherwise never experience thus facilitating a communal bond as the audience watches and learns together. If this experience is combined with further discussion, the educational experience for the audience becomes even more powerful. As mentioned earlier, in hopes of dispelling misconceptions regarding the EMR, the Adopt-A-Pond wetland conservation program, hosts

Massasauga rattlesnake educational workshops at the Toronto Zoo. In this workshop they present the audience with real hard facts through a slideshow presentation and have a meet-and-greet session with the Massasauga rattlesnake and its look-a-like species. The workshop facilitators usually hand out the ‘Living with Wildlife: The Massasauga Rattlesnake’ DVD’s to those who have signed up for their Massasauga rattlesnake workshops, so everyone who attended gets to take a copy of the film back home with them, which can be a great resource for people to keep and share with their friends and families. Unfortunately, the current DVD was quite outdated, as it was produced in 1998 and requires an up-to-date version, which is what my project is all about: to use modern visual storytelling methods to realistically frame the Massasauga rattlesnake and to be able to incorporate the film into the Massasauga rattlesnake workshops in order to increase the effectiveness of audience engagement. The link to the short film will be provided at the end of this paper.



Source: ‘Living with Wildlife: The Massasauga Rattlesnake’ - Fatima Ali

Here is an excerpt from an interview with Crystal Robertson from Adopt-A-Pond Wetland Conservation Program when sharing the importance of the making of the updated ‘Living with Wildlife: The Massasauga Rattlesnake’ short film:

“Over the years we've learnt a lot of interesting stuff about the Eastern Massasauga rattlesnake (EMR), we've done a lot of work with it, a lot of research has gone into new and emerging threats like the long term impact of roads, or the genetics of the snake, so I think to bring all of that kind of forward and let people know what's really going on helps people to understand the snake and understand the pressures that are on the snake, so by bringing in a lot of the new research and information, bringing in the people who are doing this updated work, we can see kind of how things have changed over time and use what's now this kind of new and upcoming information into our understanding of the snake and I hope that when people go and they see an Eastern Massasauga rattlesnake (EMR) and they you know gathered this information from the video or from the other resources, that the recovery team and the Toronto Zoo have to offer that they will really respect the animal and they will kind of appreciate the fact that this is a species at risk, it's something that people don't see every day, this animal is threatened or endangered and they've just encountered one and that's you know, a really amazing experience, I hope that people will value it once they've kind of understand how rare it actually is.”

Future and Significance of Conservation Film Making

One of the most common criticisms of the mass media in communicating conservation and biodiversity-related messaging is that it sensationalizes the content. What we see on our screens has been framed around our preconceived imaginations towards NHAs and mostly been produced for our entertainment. This can be seen in certain Disney feature films that have exaggerated and sensationalized the idea of snakes as being malignant and cruel towards human beings, especially towards the heroes in all their stories. By anthropomorphizing its non-human animals, Disney goes beyond giving them human attributes by also inscribing them into gendered, racial and ethnic categories. From the selected examples provided in this paper, we can clearly see how Disney anthropomorphized snakes, playing into their bitter biased stereotype of being evil. Often times, the stereotypical symbolic representations of non-human animals reflect the anthropocentric perspective of humans, drawing on non-human animals imagery to make a statement about humanity. Clearly Disney used the representation of non-human animals in an animated visual form, based mostly on stereotypes to reflect the

contemporary shift in popular culture, blurring the imminent margin between fiction and reality.

If conservation causes and organizations are to compete for space in mainstream consciousness, scientists, biologists, researchers and educators need to use the same technique that has made advertising and mass popular media messages so contagious. Businesses, governmental organizations and corporations are using visual storytelling and social media as a means to connect with other organizations, customers and members and so, conservationists should follow suit. Even though several communities of conservation biologists, organizations and governmental bodies have acknowledged the importance of social marketing, the continuing loss of biodiversity locally and globally means that more effective outreach avenues are clearly needed. Visual communication and storytelling, in the form of non-fictional conservation film-making can help focus the dialogue on what conservation organizations would want their target audience to focus on. Factual stories, or non-fictional stories, are often chosen to explore and analyse situations to enlighten, to be persuasive and indicate different points of view, giving them authenticity. What conservation film-making has done is added a new element; an agenda, a call to action, using storytelling to elicit change. Returning to the case of the Eastern Massasauga rattlesnake, organizations like the Toronto Zoo thus need to incorporate visual storytelling into their already established outreach educational programs in order to further their engagement of conservation messaging with the public today. Currently, the Eastern Massasauga rattlesnake workshops hosted by the Toronto Zoo present the audience with a slideshow presentation and a meet-and-greet with the rattlesnake and its look-a-likes. My research argues for the necessity and urgency for conservationists to include a component of visual storytelling into their outreach programs along with strong social media emphasis in order to actively engage the audience, especially the younger audiences, with the subject matter of protecting the Eastern Massasauga rattlesnake. If done right, non-fictional visual storytelling is crucial in order to allay fears, behaviours and attitudes, and thus can be a powerful tool in the fight for conservation. The 'Living with Wildlife: The Massasauga Rattlesnake' short film produced to complement this paper depicts the Eastern Massasauga rattlesnake as the shy and timid creature that it is, dispelling myths of its stereotype for those living and working within its habitat range.



Source: 'Living with Wildlife: The Massasauga Rattlesnake' - Fatima Ali

Film has become one of the most powerful tools for disseminating ideas and information to large numbers of people. It can also be a highly effective way of communicating with key individuals who are in a position to make those urgent changes. Studies have shown that television has been the main source of information for most people to learn about basic scientific research, news and discoveries, but never has the time been more critical for film-making to help make a difference to the natural world. Given the technology we have today, moving images can now be accessed in more ways than ever before. With the updated modern 'Living with Wildlife: The Massasauga Rattlesnake' short film completed, Toronto Zoo can now provide the platform for people in Ontario to access the film online via Youtube and Vimeo as well as provide the opportunity to take the film experience home via DVD, allowing sharing and accessibility to become that much easier. Their use as outreach tools, complemented by carefully designed outreach programs can go a long way to communicating much needed awareness and knowledge of biodiversity and basic conservation science to an audience that conservationists cannot do without, which is exactly what we hope to achieve with the new and updated 'Living with Rattlesnakes' short film that was produced as a part of this research project.

Conclusion

Cultural environmental studies focus on the conceptual, historical and cultural root of environmental issues, and on environmental arts, education, policy and cultural organizations as crucial sites of environmental action. Environmental education is “aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work towards their solution” (Stapp et al., 1969). The main goal of environmental education is to assess environmental issues, find feasible solutions to any problems that are identified, and finally to create pro-environmental behavior (Magnas, Martinez, & Pedauye, 1997). Therefore, there is a clear assumption in environmental education that we need to give individuals more environmental information and more environmental knowledge to change their responsible environmental behavior (Hungerford & Volk, 1990). The main focus of environmental education programs has been to change environmental behavior through increasing environmental knowledge. We need to give individuals strategic, effective and valuable environmental knowledge to change their behavior towards the environment in a sustainable manner.

Art, specifically visual art, should be incorporated as a fundamental educational tool, especially for local and non-for-profit organizations, in order to increase environmental sustainability and awareness through integration with science. The power of art and effective communication to persuade, and to arouse curiosities, consciousness and a new global perspective, is fundamental to human mobilization for this cause. Environmental education has an important role to play in creating conceptions and informing practices in ways that stimulate thought, imagination, feelings and action. Since the media is a space of and for learning, it should be incorporated into the field of education (Blewitt, 2011). It stands to reason that if people are changing the way they consume their news, then scientists, educators and conservationists need to change the way they report issues to them. Strategic communications in a respectful manner is key to gathering support for conservation action. The integration of visual communication and storytelling can be a successful approach to enable the public to engage with the challenges faced by scientists, conservationists, social workers and activists.

The focus of this paper is on the Eastern Massasauga rattlesnake which has suffered from the overall negative image of snakes created by traditional storytelling and mainstream media.

This study contributed towards our understanding of popular media depictions of snakes, adding a unique perspectives to the existing literature on the influence of Disney films on our imaginations through depictions of anthropomorphized nonhuman animals and their stereotypes. Given that Disney films have tremendous reach in popular culture, the depiction of non-human animals in Disney films warrants further examination since there seems to be little research examining specific representations of non-human animals in Disney animated movies and the environmental impacts it can cause. This attempts to situate this research within the broader context of earlier Disney film studies and provides a unique perspective with which to examine Disney films using a conservationist framework with a strong focus on the depiction of snakes. Furthermore, conservation organizations stand to benefit in that this research can help guide their communication methods and delivery to the general public.

The issue of education is presented whenever there are children involved, as they have such malleable minds and Disney films have the power to be educational. That is why wildlife or conservation films such as 'Living with Wildlife: The Massasauga Rattlesnake' should be shown as a motivating and educational medium for the general public, focusing on the younger generation, to teach them the facts about certain species and environments. Visual storytelling, mainly film, must be used in addition to having hands-on living animals for particular educational purposes. Overall, I argue that art media, specifically visual art, should be incorporated as a fundamental educational tool, especially for local and non-for-profit organizations, in order to increase environmental sustainability and awareness through integration with science. Films must be shown as part of a conservation education program that incorporates other education materials and group discussions so that the desired conservation message can be clearly defined and reinforced. Once the support for conservation has been established, and once the enthusiasm for conservation actions has been created, practical assistance and follow-up support is crucial to ensure certain attitudes and behaviours are implemented. Furthermore, studies need to investigate the feelings, thoughts and beliefs of environmental education participants in order to accurately assess their long-term behaviours and to assess the effectiveness of the workshop programming itself. In addition, further examination is necessary to evaluate the effectiveness of incorporating visual storytelling for conservation purposes.

Appendix

Source: 'Living with Wildlife: The Massasauga Rattlesnake' - <https://vimeo.com/262535568>

Source: <https://animationscreencaps.com/>

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