

The Evolution of Technology and its Role in Wildlife Conservation Documentary Filmmaking and
Storytelling – Addressing Platforms, Practices, and Demands for Driving Change

RQ: How has the growth of camera and platform technology altered the filmmaking techniques, storytelling practices, and platform choices in the *Coasts* and *Coastal Seas* installments of the BBC's Blue Planet (2001), Blue Planet II (2017), and Netflix Original Our Planet (2019)?

Subject: Film

Word Count: 3977

Table of Contents

INTRODUCTION	3
THE EVOLUTION OF WILDLIFE FILM	4
CAMERA TECHNOLOGY AND TECHNIQUES THROUGH THE YEARS	4
<i>Megadome</i>	<i>5</i>
<i>Tow-Cam.....</i>	<i>6</i>
<i>Drone Technology.....</i>	<i>9</i>
<i>Altering Time</i>	<i>11</i>
Timelapse and Hyperlapse Technology	11
Off-time	14
<i>Impact of Camera Technologies on Techniques and Styles in Wildlife Filmmaking.....</i>	<i>16</i>
SHIFTING PLATFORMS IN CONSERVATION FILM	16
<i>Airing History Behind the Blue Planet series versus Our Planet (2019)</i>	<i>17</i>
CONCLUSION	20
BIBLIOGRAPHY	21

Introduction

Our current generations are taught of fragile environments and species from a variety of sources, and as films adapt to tackle such issues as environmental upset continues to rise, they have also allowed viewers the ability to dive into the depths of the blue with a sperm whale or soar in the sky with a seafaring albatross from the comfort of home. Wildlife documentaries have opened eyes around the world to the issues that face these wonderous individuals and environments, and some pursue to inspire tangible action from audiences rather than offer themselves as a distraction to everyday life.

This investigation is an in-depth examination of the camera and platform technologies that have influenced the techniques, storytelling styles, and platforms choices behind the British Broadcasting Company's (BBC) *Coasts* Installments of *The Blue Planet* (2001) and *Blue Planet II* (2017), in addition to the *Coastal Seas* episode of the Netflix Original *Our Planet* (2019) by Silverback Films. These series promote the conservation of the wildlife and wild spaces of the marine world and more, but since previous examinations of conservation film have failed to discuss how the wildlife documentary genre has grown through our recent generation of activism media, this investigation will uncover what filmmaking practices and pressures evolved alongside the technological advancements present in these films to answer the research question: **How has the growth of camera and platform technology altered the filmmaking techniques, storytelling practices, and platform choices in the *Coasts* and *Coastal Seas* installments of the BBC's *Blue Planet* (2001), *Blue Planet II* (2017), and the Netflix Original *Our Planet* (2019)?**

To answer this question of an ever-evolving genre, I researched the realm of wildlife documentary filmmaking, focusing primarily on marine conservation films aiming to uncover the most mysterious environment on Earth. Aside from researching technology, behind the scenes accounts, and the films themselves that boast the audiences' praise, I most importantly consulted with professional filmmakers in the field and discovered what they experienced and valued after dedicating their livelihood to teaching conservation and inspiring action.

Educational filmmaking was built on top of a Hollywood façade, so it is vital to acknowledge the influence of technological advancements, conservation concerns, and the platform options for wildlife conservation films to understand where started and where they have yet to go.

The Evolution of Wildlife Film

Camera Technology and Techniques Through the Years

The technology that has evolved around capturing the dangerous yet wondrous world under the surface has come a long way since the first underwater rig. The 1914 Photosphere was a contraption built by John Ernest Williamson composed of an accordion-like metal tube extending from the bottom of a vessel with an observation chamber at the bottom. This invention allowed photographers and filmmakers to capture footage nearly 250 feet under the surface, but filmmakers were restricted to tight corners and a small porthole to shoot out of (Popular Science) (Epstien). To underwater remote-operated-vehicles, submarines, and handheld encasements for smaller camcorders, the following camera technologies and techniques from the first Blue Planet (2001) to Our Planet (2019) demonstrate the genre's

growth and adaptation to such technological advancements. The following section will also reveal their impact on conservation storytelling styles that have increased over the years.

Megadome

In *Blue Planet II* (2017), capturing the activity both above and below the water's surface became a necessity for the immersive nature of the project. To combat the refraction of light and restricting frame of traditional lenses, the 60cm Megadome housing-lens captured both environments seamlessly with its hemispheric dome shape and wide-angle lens housing capabilities (Bedingfield). During the production of *Blue Planet* (2001), this technology was not available, and the crew had to film either above or below the water's surface. In one sequence, a stellar sea lion leaps into the waves to pursue its prey, but the crew stays ashore to prevent themselves from facing the powerful waves.



Figure 1 and 2: A Stellar Sea Lion dives into the water as the camera remains perched atop the shore.

The limitations of the camera are noticeable by its stationary position on the land and the rigid nature of the panning shot. The pan follows the movement of the Sea Lion as it makes its way to the waters' edge, but the limitation of its movement is quite obvious in contrast to the surrounding dynamic environment. The lack of movement detracts from the immersive experience and presents this situation in a more observational light.

In *Blue Planet II* (2017), the megadome challenged the observational tone of wildlife film and redefined the genre to emphasize immersion, capturing action above and below a cove as a juvenile sea lion chases a Yellow-Fin Tuna.

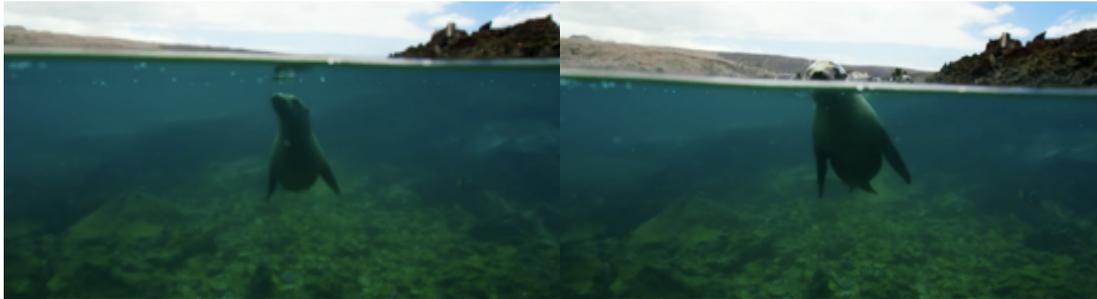


Figure 3 and 4: A sea lion breaks the surface of the water to take a breath.

This footage proliferates a sense of scale and familiarity with this pursuit. The Megadome breaks the surface at the same time as the sea lion when taking a breath to continue its pursuit under the surface, and the brevity of the shots convey a sensation of haste that mimics the speed necessary in a high-stakes chase. Associating haste between the two active environments simulates the chase from the sea lion’s perspective. With the Megadome, filmmakers are able to cater to engagement demands and stir empathy from their audience by placing them into a similar position as the sea lion all at once.

Tow-Cam

The dynamism of *Blue Planet II* (2017) and *Our Planet* (2019) is increasingly pronounced in comparison to its 2001 predecessor. With recent technologies, previously “land-exclusive” techniques have been applied to the two films, renovating styles of storytelling for the marine world (Christian).

Tow-Cams available in the production of Blue Planet II (2017) allowed filmmakers to attach cameras to vessels traveling at high speeds and withstand the force of drag below the water's surface (McIntosh). As a result, terrestrial filmmaking techniques such as "trucking" became possible in the underwater world (Nguyen). The first recognizable example in Blue Planet II is shown below as the camera follows the horizontal movement of a school of Yellowfin Tuna.



Figure 5: The camera follows the school of Tuna, staying at-pace with the fish.

The movement of this shot intends to immerse audiences in experiences that are unmatched by everyday human life. "Trucking" alongside the massive tuna in Figure 5 gives a glimpse into the power and stamina required to traverse the open seas, stirring an appreciation for their complex behaviors. Trucking superimposes a stationary subject (physically in-motion) against a moving background, similar to the sensation of looking out of a vehicle window or riding a bike as the world wraps around someone's line of sight (Columbia Film Language Glossary). The familiarity with this sensation is intuitive between the viewer and subject. Because of this, filmmakers allow viewers to experience the same sensation as the subject in a bizarre and foreign context, invoking immersion and appreciation all at once.

Our Planet (2019) also uses trucking and mimicry in the *Coastal Seas* episode. When filming the stingrays in the Everglades feeding upon the seagrass, cameras remained at-level

with the rays as they glided across the fields, mimicking the motions of the rays themselves at varying angles (Bedingfield).



Figures 6 and 7: The camera glides atop the seagrass and cuts to the stingrays conducting a similar motion.



Figure 8: A camera follows the horizontal motion of the stingray.

Mimicking the sweeping motion of the stingrays in Figures 6 through 8 gives a similar immersive sensation as the use of trucking in *Blue Planet II* (2017), but also serves as a narrative tool highlighting the importance of collaboration between the individuals. This illusion of close contact with the animals generates a sense of intimacy for the audience and demonstrates the relationship between the creatures' struggles and our own. Collaboration is consistent between human social lives and the lives of these stingrays, and viewers are able to insert themselves in such situations and discover new connections to these creatures. Creating connections is crucial in conservation work according to conservationists across the board (Reed), and with the technology and ability to create more immersive, dynamic, and intimate sequences in *Blue*

Planet II (2017) and Our Planet (2019), filmmakers are able to extend this mission and renovate methods to further improve empathy-driven filmmaking.

Drone Technology

Comparatively lightweight, less intrusive, and inexpensive than helicopters, drone technology dominates aerial filmmaking and photography, especially in wildlife filmmaking scene for their versatility and noninvasive nature (Nelson). “A filmmaker can now essentially place a camera anywhere in 3D space. They can replace a crane, a dolly, and a Steadicam with drone—and spend no time setting up any sort of rigs,” (No Film School). With such positive qualities and accessibility, drone footage has forever altered the way wildlife film captures the stories of environments and individuals.

During the production of Blue Planet (2001), drone technology was not available for commercial filmmaking, let alone wildlife filmmaking (No Film School). In Blue Planet (2001) *Coasts* episode, helicopters were the only means of aerial filmmaking and were used only to create large establishing shots of the landscapes or environments involved in the film instead of the animals themselves.



Figures 9 and 10: Two landscape establishing shots

The footage from the figures above convey an appropriate sense of scale of the environments in the film. Figure 9 displays the sheer cliffsides of a Northern island while figure 10 shows a much shallower, tropical environment. The juxtaposition of the two locations provide context for audiences regarding where some animals live and how their lives play out but lacks the immersive and intimate tone that modern aerial footage is capable of today. In an attempt to limit disruption of wildlife, the aerial filmmaking in *Blue Planet* (2001) was restricted to these observational establishing shots, far away from animals in general.

In addition to establishing shots, drone footage in the *Coasts* episode of *Blue Planet II* (2017) emphasized the scale of certain animal migrations. In one scene, drones revealed a massive gathering of sea turtles making their way back to the ocean after laying their eggs. Each frame sequentially increases in scope as the drone increases in altitude.



Figures 11 and 12: The sea turtles return to the water.

Although this scene captures a seemingly massive population of sea turtles and raises no prominent concern over threats or decline of the population, this scene inspires conservation in another form: wonder. By giving a new perspective of scale, an appreciation for the phenomenon can develop into a desire for preservation (*Our Planet*). Understanding that this population could take a turn for the worse and could cease to exist at the scale captured by

this intimate drone footage promotes a need of protection and advocacy for these creatures, associating their experiences so closely to our own.

Altering Time

Timelapse and Hyperlapse Technology

Often described as a step-up from timelapse photography, hyperlapse photography incorporates movement and large distances into a seemingly continuous shot or sequence (Seaton). Before and after shots utilized in the *Coasts* episode Blue Planet (2001) allowed for a quick recognition of change, but timelapse and hyperlapse technology allows viewers to see change occur before their eyes.



Figure 13 and 14: This sequence from Blue Planet (2001) shows a Humpback breaching the surface to feed, then cuts to a whale carcass on a beach.

The sequence above establishes the general narrative of a humpback whale's role in the marine ecosystem. The juxtaposition of the two shots with little to no buffer footage in between translates to a quick recognition of a large passage of time, leaving the audience to infer that the whale in figure 13 will reach the same fate as the whale carcass in Figure 14.

Although the happenings of a humpback's life are not the focus of the film, leaving much of the

whale's journey out of the film exercises the audience's ability to infer its story, and does not highlight the processes related to the whale's death and decomposition nor its relationship to the human perceptions of its role in the wild.

In comparison, the *Coasts* episode of *Blue Planet II* (2017) utilizes hyperlapse technology to capture a substantial timeline of natural phenomena that occur at a speed too slow for real-time observation. In the first instance, viewers witness the tides fluctuate as the waves carve a vast stretch of coastline. The hyperlapse fully complements the grandeur and span of the waves crashing against the long shoreline.



Figures 15 and 16: The camera appears to move backwards continuously through the shot, seamlessly stitching each landmark of the coasting together in a seemingly uncut fashion

In addition to the coastline hyperlapse, viewers also peek into the microcosm of intertidal marine life thriving along the coastline. Often unseen in real-time, these organisms move and shift to accommodate to their dynamic and perilous environment through this timelapse.



Figure 17: A yellow nudibranch travels across the rocky bed of a tidepool.



Figure 18 and 19: A green sea anemone engulfs a mussel

The utilization of timelapse and hyperlapse technologies in *Blue Planet II* (2017) are not only visually pleasing, but they highlight the natural phenomena that people tend to overlook or underappreciate. Visualizing the cumulative strength of the waves on the coastline in Figures 15 and 16 drives a variety of emotions with the audience, possibly a fear of destruction from natural forces, or an appreciation for the existing structures that are a result of these powerful waves that many tend to pass by without a second thought. Viewing the daily migration and unseen narratives of tidepool invertebrates such as sea slugs and sea anemones in figures 17, 18, and 19 give a new light to how people perceive the limits of their existence and intelligence. Some may believe these creatures lead plain and sedentary lives initially but are now able to witness movements and processes that play into each moment of their lives as part of a complex and competitive ecosystem.

As for *Our Planet* (2019), timelapses are used to highlight the degradation of delicate coral reefs in the tropical pacific.



Figures 20, 21, and 22: A coral begins to “bleach”, highlighting the threat of rising temperatures that kill off microscopic zooxanthellae that are crucial to a coral’s survival.

Unlike the timelapses in *Blue Planet II* (2017) this timelapse aims to show the opposite wellbeing and instead shows a struggle caused by our own actions. Instead of evoking a sense of awe, this sequence highlights loss and death as it occurs at an exaggerated rate. Visualizing the decay of vivid coral systems is meant to instill concern and grief with the audience. This choice emphasizes the limited time these fragile systems have to recuperate or prevent themselves an eventual demise and places the responsibility of this decay on humans.

Off-time

One of the most commonly adopted film techniques in the wildlife documentary scene is off-time. Off-time is defined as slow motion recorded with a slightly higher framerate than the standard 24 frames a second (Vox). Capturing time slightly slower than real life adds a cinematic tone to any shot, and in the case of *Blue Planet II* and *Our Planet*, off-time also extends natural phenomena to an observable length. One instance from *Blue Planet II* (2017)

involves Lightfoot crabs making a break across treacherous waters to feed on vegetation-covered rocks.



Figure 23: Lightfoot crabs traverse the rocky coastline, some jump across the rocks (entire sequence in off-time)



Figure 24 and 25: An octopus attempts to take down a crab as it scurries across a small tidepool

The crabs sprinting across the shoreline in Figure 23 and the swiftness of the octopus trying to capture a crab in Figures 24 and 25 are too quick to comprehend in real-time. Using a slight slow-motion effect that is just shy of real-time can stretch these fleeting moments into substantial chunks of time that make the event more comprehensible and observable for the human eye. Like timelapse or hyperlapse technology, generating observable footage of natural events that either appear too fast or slow for the human eye generates appreciation and inquiry. Understanding the details of how events occur allows viewers to spectate the event with a true grasp of the fear or excitement involved in each moment. In the case of the shore

crab sequence, the audience feels a sense of panic and fear relating to the dangerous situation, trying to outrun their extremely intelligent and versatile pursuers.

Impact of Camera Technologies on Techniques and Styles in Wildlife Filmmaking

Despite the fact that these films are at most two decades apart, the cinematography of Blue Planet (2001) in comparison to the cinematography of Blue Planet II (2017) and Our Planet (2019) show great improvements to quality, versatility, and expression in portraying these conservation stories. Thanks new technologies, the restrictions of recording both space and time are lessening. Conservationist filmmakers have been able to utilize these technologies to enhance their viewers' perspectives of their place on earth, overall changing the tonality of the wildlife film genre. The genre initially viewed wildlife with detachment and observation, but now projects stories with varying perspectives and aims to convey empathy through the miniscule anthropomorphic and relatable behaviors or qualities found within the animals in these films.

Shifting Platforms in Conservation Film

As examined in the previous section, technology primes the human world for increasing visibility on all fronts. With this trend of visibility, publication pressures exist to keep audiences engaged with the documentary film genre. As described by Professor Chris Palmer from American University, "These networks like (National) Geographic, Disney, and all the others, base their content and rely on ratings. Networks are always pushing producers like me to have exciting and appealing footage, and it always brings the worst out of people, especially when

they abandon their vision and core beliefs for the appeal of their audience and broadcaster” (Palmer, Interview with Professor Chris Palmer) (Palmer, Shooting in the Wild). Professor Palmer's account reveals that wildlife documentary filmmakers are no exception to the pressures from broadcasting companies and TV channels to have the most exciting and engaging content. In an industry that was built off a foundation aiming to entertain people, conservation films often struggle to meet the quota of human entertainment when supplying vital educational material which can be oftentimes deemed as mundane or disheartening. However, with an upheaval of different viewing services from recent years, the following suggests that the battle to achieve the ratings required by large cable companies may be an issue of the past for conservation films, and ultimately revolutionize the way films of the genre are made, seen, and consumed. This battle is extremely apparent with the Blue Planet and Our Planet series as each premiered in unique ways, and each have their own story to tell on audiences and accessibility in the genre.

[Airing History Behind the Blue Planet series versus Our Planet \(2019\)](#)

The Blue Planet (2001) series amassed 12,000,000 viewers during its TV premiere in 2001. The second season, Blue Planet II (2017), garnered a viewer count of over 14,000,000, topping the BBC television charts for the year of 2017 overall (BBC News). The benefits of airing conservation films on larger channels such as the BBC are clear based on these viewer counts - with more films promoting conservation in large networks, people who consume mainstream media are purposefully or incidentally more aware of the issues addressed in these films. However, many conservation filmmakers rarely get the chance to air their content on big-time broadcasting channels because of specific pressures to keep content engaging audiences

(Palmer, *How to Film Bear and Sharks without Getting Eaten: Making Environmental Films that Make a Difference*). The pressures previously discussed by Professor Palmer can trigger a complete reconstruction of the storytelling in a film, oftentimes sacrificing the essential yet possibly saddening details intended to spread conservation awareness just so their content can air.

In recent years however, filmmakers have been able to reach new means of gaining audience awareness without sacrificing too much of their original vision, primarily thanks to streaming services just such as Netflix, Hulu, YouTube, and many more (Wildscreen). Not only do these streaming services break up some of the national/international barriers and limitations for content that comes with TV cable companies, but they provide a much more accessible and personalized experience for each individual viewer and their interests (Brantner).

Taking *Our Planet* (2019) into account, its release on Netflix amassed over 33 million viewers worldwide and counting (Singh). Netflix took this a step further by uploading the entire series onto the free video streaming platform, YouTube, just over a year after its release (Netflix). The move to YouTube demonstrates that *Our Planet's* mission is a culmination of genuine conservation concerns from the conservation community because of this dedication towards accessibility throughout its platforms. While Silverback Films and Netflix have notable backgrounds in the industry as it stands, their ability to adapt to the new technologies and demanding audiences have proven worthy. The transfer of content from a subscription platform to a free streaming platform ensures accessibility for those who do not have the

resources to pay subscription fees, in turn, increasing visibility of concerns. While this reduces the overall possibility of profit from the project, as described by numerous wildlife filmmakers such as Erin Ranney of National Geographic and BBC, getting a message of concern and conservation into the public is worth the lesser profit (Ranney, Interview with Erin Ranney) (Ranney, Girls Who Click Workshop - Basics of Wildlife Filmmaking with Erin Ranney). Ranney described passion as the driving force behind why she continues to work in wildlife cinematography despite the reputedly low pay-out. To further this point, Professor Palmer brought up a similar sentiment during his interview and mentioned the following: "Some films in wildlife are simply designed to broadly entertain and educate. But a lot of films, especially the latest ones I've been involved with, are designed to promote conservation overall, to do more than just distract people for an hour and teach them a little bit about a species or ecological system. They are actually designed to push people towards taking action for my subjects, not just observe them passively" (Palmer, Interview with Professor Chris Palmer). This designation from Palmer and Ranney instills the idea that the intent of conservationist filmmakers is what defines them as a conservationist filmmaker. There is a necessity for selflessness to create content aimed to genuinely educate audiences about conservation issues. Conservationists who are willing to take advantage of new platform technologies and open their content towards accessibility prove their intent to be one of inspiring action, rather than making large profits from the industry and job itself.

Conclusion

The growth of technology has revolutionized how wildlife conservation stories are told, where they are told, and who gets to listen. This investigation uncovered the evolution of camera and platform technology between the production of *Blue Planet* (2001) to *Our Planet* (2019), revealing the impact it has had on the filmmaking choices and storytelling styles that inspired action and accessibility for audiences far and wide. These filmmakers have accommodated to the demand for engaging audiences while addressing conservation issues by taking advantage of camera technologies permitting immersive yet noninvasive filmmaking and by developing exciting yet empathetic storytelling styles to balance entertainment with the crucial information needed to advocate for a threatened species or environment. Even though technology has influenced what is possible to capture in this realm of filmmaking, it is the filmmaker that establishes the direction of their film. On a spectrum of action, a true conservationist filmmaker aims to push their audience to a point where taking action is feasible and desirable.

As this investigation focused primarily on the technological side of wildlife film regarding the stylistic and platform decisions that have come up as a result of these advancements, this investigation has yet to uncover how filmmakers decide which narratives to share with their audiences. A further investigation taking into account the subjects of these conservation films would be highly interesting, especially to understand why specific species are talked about more than others, and what that means for the exclusive conservation concerns that impact their survival.

Bibliography

- BBC News. "Blue Planet II tops 2017 TV ratings." 10 January 2018. *BBC*. 23 May 2020. <<https://www.bbc.com/news/entertainment-arts-42641146>>.
- Bedingfield, Will. "The tech behind Our Planet, David Attenborough's first Netflix show." 6 April 2019. *WIRED*. 14 June 2020. <<https://www.wired.co.uk/article/our-planet-netflix-david-attenborough>>.
- Brantner, Chris. "More Americans Now Pay for Streaming Services Than Cable TV." 20 March 2019. *Forbes*. 3 April 2020. <<https://www.forbes.com/sites/chrisbrantner/2019/03/20/americans-now-pay-more-for-streaming-services-than-cable-tv/#3c269008fcdd>>.
- Christian, Bonnie. "The ingenious technology behind Blue Planet II." 26 November 2017. *WIRED*. 25 July 2020. <<https://www.wired.co.uk/article/blue-planet-2-technology-david-attenborough>>.
- Coastal Seas, Our Planet*. Dir. Sophie Lanfear. Perf. David Attenborough. Silverback Films. 2019. Netflix Miniseries.
- Coasts, Blue Planet*. Dir. Alastair Fothergill. Perf. David Attenborough. British Broadcasting Company. 2001. TV Miniseries.
- Coasts, Blue Planet II*. Dir. James Honeyborne. Perf. David Attenborough. Prod. Mark Brownlow. 2017. TV Miniseries.
- Columbia Film Language Glossary. "Tracking (Trucking) Shot." n.d. *The Columbia Filma Language Glossary*. 12 June 2020. <<https://filmglossary.ccnmtl.columbia.edu/term/tracking-trucking-shot/>>.
- Epstien, Sonia. "Nautical Film." 13 July 2018. *Sloan Science and Film | Museum of the Moving Image*. 2020 August 13. <<http://www.scienceandfilm.org/articles/3117/nautical-film>>.
- McIntosh, Stephen. "Blue Planet II: 22 things to know about the new series." 29 October 2017. *BBC News*. 4 July 2020. <<https://www.bbc.com/news/entertainment-arts-41692370#:~:text=Five%20babies%20were%20born%20to,%3A%20%22We%20had%20three%20weddings.>>>.
- Nelson, Rob. "Wildlife Film Ethics." October 2013. *Untamed Science*. 12 June 2020. <<https://untamedscience.com/filmmaking/ethics-in-wildlife-film/>>.
- Netflix. "Our Planet | Coastal Seas | FULL EPISODE | Netflix." 17 April 2020. *YouTube*. 20 June 2020. <<https://www.youtube.com/watch?v=r9PeYPHdpNo&t=261s>>.
- Nguyen, Hanh. "'Planet Earth: Blue Planet II': 8 Ways Producers Filmed the Wet and Wild Aquatic Stars." 18 January 2018. *IndieWire*. 1 July 2020. <<https://www.indiewire.com/2018/01/planet-earth-blue-planet-2-cameras-amc-bbc-america-1201918989/>>.

No Film School. "Planes, Helis, and Drones: How the View From Above Changed Cinema." 24 May 2018. *No Film School*. 23 August 2020. <<https://nofilmschool.com/2018/05/planes-helis-and-drones-how-view-above-changed-cinema>>.

Our Planet. *What can I do?* n.d. 1 May 2020. <<https://www.ourplanet.com/en/>>.

Palmer, Chris. *How to Film Bear and Sharks without Getting Eaten: Making Environmental Films that Make a Difference* Kent State University at Stark. 3 April 2013.

Palmer, Chris. *Interview with Professor Chris Palmer* Samantha-Lynn Martinez. 14 July 2020.

—. *Shooting in the Wild*. Berkeley: Counterpoint Press, 2010.

Popular Science. "The lost, first underwater film: "The Terrors of the Deep" || EXPERIMENTALS: Nautilus (part 3)." 23 June 2018. *Youtube*. Youtube Video. 4 May 2020. <<https://www.youtube.com/watch?v=QPW9z7XNGBM>>.

Ranney, Erin. *Girls Who Click Workshop - Basics of Wildlife Filmmaking with Erin Ranney* Girls Who Click. 9 September 2020.

Ranney, Erin. *Interview with Erin Ranney* Samantha-Lynn Martinez. 1 August 2020.

Reed, Apryl. *Interview with Apryl Reed* Samantha-Lynn Martinez. 28 July 2020.

Seaton, Wallis. "Hyperlapse and timelapse: what's the difference?" 8 May 2018. *Time-Lapse Systems*. 7 July 2020. <<https://www.time-lapse-systems.co.uk/2018/05/what-is-hyperlapse/>>.

Singh, Anita. "Netflix's Our Planet will reach one billion viewers in a way the BBC cannot match." 1 April 2019. *The Telegraph*. 3 May 2020. <<https://www.telegraph.co.uk/news/2019/04/01/netflix-series-planet-will-reach-one-billion-people-way-bbc/>>.

Vox. "How the BBC makes Planet Earth look like a Hollywood movie." 20 February 2017. *YouTube*. 27 May 2020. <<https://www.youtube.com/watch?v=qAOKOJhzYXk>>.

Wildscreen. *Wildscreen Festival*. n.d. 2020 25 June. <<https://www.wildscreen.org/festival/>>.