

Sharing wildlife conservation through 4 billion views on YouTube

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March 07, 2024

Abstract

YouTube is an online video sharing platform attracting billions of users from global audiences. Videos containing wildlife are a popular subject, with such content being a valuable tool for educating on wildlife initiatives and having the potential to make a meaningful impact on future conservation. Here we examine the YouTube channel BraveWilderness. This channel has uploaded 662 videos and recently surpassed 4 billion views for their wildlife-centric and conservation-themed content. BraveWilderness shows diverse biodiversity from a multitude of habitats, and often highlights under-represented taxa. Successful videos, such as those that go viral, can be examined to understand what images and messages resonate with a wide audience, thereby informing conservation practitioners on future outreach efforts. As internet use continues to expand, and the need for content increases, scientists can benefit from participating with and directly contributing to entertaining and educational digital media efforts beyond traditional means of scientific communication.

INTRODUCTION:

YouTube attracts over 2 billion logged-in users per month amounting to nearly one third of internet traffic (YouTube 2021a). This video sharing platform has exploded in popularity since its founding in 2005, with a diverse range of digital content and creators. Over 70% of watch-time comes from mobile devices, with the platform currently available in 80 languages (YouTube 2021a). Over 1 billion hours of videos are watched daily (YouTube 2015). YouTube is popular with younger adults, with the 18-34 age group making up the majority of active profiles, and users are more likely to have children than non-users (Google 2021b). With this vast reach in mind, YouTube represents an important pathway for highlighting wildlife and conservation science to a broad audience. However, use of social media data by much of the scientific community remains limited (Toivonen et al. 2019) especially with regards to conservation science (Wu et al. 2018).

Traditional research outputs including both publications and presentations are necessary for the advancement of academic science. Social media helps to deliver scientific content to a general audience, to those not able to participate in a conference setting, and to those without access to embargoed research. Social media can also deliver content in a more understandable (and enjoyable) way to the public, with links back to the original research. Underserved communities at a global level can benefit from the free YouTube content, providing education and excitement to anyone with internet access. Many interesting publications can be enhanced through adventurous explorations into the topic via YouTube. An example of this is algogenic insect stings (Schmidt et al. 1983) which are often popular with a general audience (Schmidt 2020). Publications detailing the personal experience of a given venom are limited; adding the human element and direct visuals helps to bring this research to life and connects digital content with a vast and diverse audience. Examination of the types of ecological stories and visuals that are popular on YouTube provides conservation practitioners and policy makers an understanding of what interests a general audience and offers inspiration for their future

endeavors. Social media data has been suggested to be valuable in a variety of fields (Di Minin et al. 2015) with data of particular use to conservation science efforts (Otsuka and Yamakoshi 2020).

Many science themed channels exist on the YouTube platform (Huang and Grant 2020), with some obtaining a viral reach. One way a large audience size is achieved is by building a follower base who view content as it is produced, irrespective of topic. Here we report on the success of a single YouTube channel “BraveWilderness” with its animal-centric content receiving over 4 billion views. These demographics are comprised of a large base of interested viewers, many of whom would not search directly for a given topic but enjoy, and benefit from, the content.

BraveWilderness is a YouTube channel that was created in 2014 with the main focus of showing interesting wildlife in its natural habitat. The hosts find various creatures and highlight their morphology and adaptations in engaging short videos which are uploaded to the platform. Although rarely didactically instructional, BraveWilderness video content tells a multilayered story, often with the goal of answering questions in life science fields. Special attention is given to entering extremes of nature and finding interesting and misunderstood wildlife, many of which are underrepresented in conservation efforts. Although not all BraveWilderness videos are strictly conservation themed, the content created tells a compelling story and highlights fascinating wildlife, bringing awareness of science, nature and conservation subjects to a large audience. By highlighting such biodiversity, it is clear that the more people that are reached, the greater chance of them caring, which is how conservation ultimately succeeds. As social media becomes an increasingly powerful tool, academics and conservation practitioners can benefit from examining successful outreach efforts, and directly participating in web-based outreach activities.

METHODS

Videography

BraveWilderness uploaded its first media content to the video sharing website YouTube in 2014. At that time, BraveWilderness used a Canon XA10 prosumer camcorder as their main recording device and complemented it with the GoPro HERO 1 and Drift HD170 Action Camera. The total cost for the package of equipment used in initial productions was less than \$3,000 (USD). Additional filming accessories were two Ikan bicolor battery-operated LED light panels, a Sennheiser MKE 600 Shotgun Microphone for audio, and SanDisk PRO SD cards for field media.

Hard drives (G Technology G-RAID 12TB) were used to store media for post-production. A MacBook Pro was used for media transfers and field editing when required for footage reviews and uploads on location. An Apple iMac complemented with the current version of Adobe’s Premiere Pro editing software was used for standard video editing and uploading.

Concurrent with channel growth, BraveWilderness production upgraded to lower end professional cameras such as the Canon EOS C100 and the Sony FX6, but use of prosumer grade products such as GoPro, iPhones and hobby-level unmanned aerial vehicles (i.e., DJI ‘drones’) continued. All postproduction and delivery of digital products continues to take place on Apple iOS devices using software products from the Adobe suite.

Site Metrics

View count is a metric confirmed by proprietary Google analytics (Google 2021a). Since view number has a direct effect on advertising revenue, these metrics are highly accurate and verified, and therefore can be used as a direct proxy of a video’s popularity. Video view data can be generated in real time, and performance tracked over time.

Content Development

BraveWilderness initially only released one video per week, and grew to two or three videos per week as resources to do so were developed. Increased segment length and quality targets have since reverted the channel to the initial model of one video per week.

From the start of the project, story development, a primary driver of audience accumulation, was organic in the sense that the stories told were authentic nature adventure experiences. The reaction from the audience created resonance and metric standards that could then be acted upon for future content and story development. This was a cyclical process of ‘create, deliver, and observe’ which in turn promoted a sustainable R&D process to promote growth and gauge general and specific interest in certain science and wildlife subjects.

For all content, local experts and scientists were consulted prior to filming to enhance the story line. Experts were also often present off camera to provide knowledge and to ensure safety of both wildlife and crew. Required permits were obtained prior to filming in accordance with federal and state laws, additional care was taken when listed animals were featured.

RESULTS:

The success of a YouTube channel is defined by the scope of content, the number of subscribers, and the view numbers generated (Huang and Grant 2020). Since its inception in 2014, BraveWilderness has grown to >18.5M million subscribers, with 63.79M average monthly views for 2020-2021 (YouTube 2021b). Viewers aged between 13 and 34 make up 63.4% of total views. The top ten viewing countries are on five different continents. A total of 662 unique video uploads have amassed the total view count exceeding 4 billion in May 2021. Other social media platforms are used to highlight BraveWilderness content, share behind the scenes imagery, and promote future videos. Although unclear, the net effect is likely small in terms of crossover, however, a successful digital influencer can reach large audiences from a variety of platforms (e.g., Twitter, Instagram, TikTok).

YouTube requires a highly compressed format for video in order to decrease server storage space and increase upload speeds. This is mandated since many users’ access content via mobile Wi-Fi connections. These constraints have dictated reduced technical specifications compared to broadcast standards, and thus gave non-media professionals the early edge in this digital space. This was conducive to the field-centric model of BraveWilderness, which was able to acquire content from diverse and remote areas which are less easily accessed by larger production crews. These constraints work in favor of the general scientific community as they allow anyone to create meaningful content which can be distributed on a global level.

When BraveWilderness was started a 7-minute runtime on YouTube was ideal, however as overall platform watch times grew and mid roll-ads were introduced, over 10-minute duration quickly became the new standard. Currently BraveWilderness aims for a 10 to 12-minute runtime meeting the demand of metrics believed to be important for success on YouTube: overall watch time, click through rate, and viewer retention.

BraveWilderness has been active for seven years with new video content released every week. Metrics provided by YouTube reveal engagement over time, where videos can be viewed by both subscribed (green) and non-subscribed (blue) individuals (Figure 1). Subscribers are linked directly to new content, whereas unsubscribed viewers link to specific content. For most of its history, BraveWilderness has attracted a larger number of unsubscribed than subscribed viewers, and it is the unsubscribed viewers that drive the peak metrics.

Examining the metrics further, the number of views for individual videos can be determined by peaks (Figure 2) which represent the viral spikes when these videos were first released, with view number increasing over time for popular uploads (Table 1). The largest peaks often represent an insect sting/bite which have driven viral views by a broad audience. There are points which were conservation themed content (F-K Figure 2) which also increased over time (Table 1).

Morphological and behavioral characteristics of a given creature are highlighted in videos to enhance the story, providing additional learning opportunities (Figure 3, 4). The majority of the factual presentation is done in the presence of the featured species. A diverse range of flora and fauna have been featured including single cell microbes, cacti, insects, sharks, and large mammals. Wildlife has been featured from diverse habitats, primarily the deserts, rainforests, and undersea habitats of North and South America, and has also

included multiple adventures in Asia, Africa and Australia.

Many videos feature an exciting exploration and discovery section, which helps to enhance the story while showing a creature's natural habitat. However, even when a video topic is highlighting a 'dangerous' feature of a given organism, the story always shows how the species is important in its environment and demanding of respect (Table 1). These points are communicated within the video content. The amount of bravado needed on the part of the hosts remains ambiguous; animals were never harmed and were always returned to the wild after filming.

DISCUSSION:

Social media is an increasingly far-reaching but affordable communication channel (Casola et al., 2020). Other social media platforms such as Twitter (Bombaci et al. 2016), and Instagram (Hines 2019) have been shown to effectively communicate science including conservation to wider audiences. With over 4 billion views on YouTube, it is clear that BraveWilderness on is also highly successful. The lessons learned in the production of BraveWilderness content can be used by other groups seeking to provide scientific information to broad audiences.

Although we view overall success as reaching a wide audience, the astronomical viewer numbers need not be the only metric to claim a particular science video as successful outreach. Inspirational content on a smaller but focused scale can be an effective cumulative tool in reaching future conservation minded individuals.

Much speculation has gone into what makes the successful telling of a story (Huang and Grant 2020); some components are clearly vital, while the importance of others is less clear. Science on social media is often popular if it shows unusual species (Hines and Warring 2019), or ones less often highlighted in media. When views on a given video are proportionately high this is used as a proxy for its popularity (Welbourne and Grant 2016). Once videos attain certain metrics that indicate above average interest and viewer behavior, the YouTube algorithm then "serves" these videos to an increased number of positions on the YouTube platform where they gain higher visibility and thus attract an exponentially reinforcing viewership loop. This is essentially how a video goes "viral". Additionally, the 'trending' page on YouTube highlights the most recent top performing videos in terms of views, where BraveWilderness often competes with top pop culture content.

All BraveWilderness videos have educational content even though this may not be immediately obvious from the entertainment style of narrative which has become the mainstay of the channel. More traditional wildlife footage, sometimes called "in situ", cut to narration, has been tried but is less successful: YouTube is a visual platform for channels where people tune in to see something amazing, this is the format which is now used by BraveWilderness. Popular content on BraveWilderness includes interactions with diverse 'amazing' creatures, venomous organisms, charismatic megafauna, and unusual taxa (Figures 1, 2). Elements of fear/danger and the unknown are natural parts of good storytelling, as is evident by videos featuring stings or perceived danger which gain a high view count on BraveWilderness (Table 1). This does not detract from the science, or from the overarching message of the video; their use should not be avoided simply because such elements are absent in traditional academic outputs. A story involving a perceived emotional element actually enhances user engagement, and therefore provides a connection to a message and respect for the featured creature. Videos such as these also answer questions so that they need not be repeated; for example, what would an accidental sting feel like?

As videos of wildlife and their behavior continue to be uploaded to the platform, information about unusual species or from sparsely studied areas can be enhanced and provides new insights and novel behaviors (Jagiello et al. 2019, Dylewski et al., 2017). Educators, academics and enthusiasts at all levels can benefit from the growing portfolio of content.

In an increasingly digital age, it is important to provide on-demand educational content that is entertaining; the wildlife content produced for the platform allows a trip beyond the classroom by providing free content for educators to share with interested students. Academic scientists are well-positioned to contribute to the

advancing frontier of entertaining on-demand educational content. Social media allows outreach that can inspire viewers from diverse backgrounds and demographics far beyond those who would be present at a given lecture. Wildlife content will remain popular on platforms such as YouTube, and this content can be enhanced by direct collaboration with experts. Academics can also benefit from using social media for their outreach and can learn from other content creators as to what strikes a viral interest.

From a conservation perspective, showing a creature in a positive light in YouTube videos has been shown to affect the viewer's positive attitude towards that species (Casola et al., 2020). Conservation practitioners can benefit from understanding content that resonates with the general public (such as Figure 1). Videos in the BraveWilderness portfolio highlight a wide array of taxa with various features (Figure 3,4). Those that are most popular should be considered by conservation practitioners at all levels from outreach to policy.

The very act of filming a creature can be invasive at a minimal level, but were the creature to be left alone, it may continue to be poorly understood by a broad audience which has an extremely negative impact for conservation (Kidd et al. 2018). The temporary annoyance a film crew may have upon a habitat and its creatures is negligible compared to the potential for a creature to be seen by millions of viewers, creating the mainstream awareness which aids in conservation efforts. Care is taken to ensure wildlife is not harmed, having never occurred as a result of filming.

Social media outreach efforts are an evolving and expanding route for scientists, particularly those interested in underrepresented taxa, to highlight their organisms and strive for enhanced conservation initiatives through increased awareness.

CONCLUSION:

It is likely that viewers will never directly interact with an animal highlighted in BraveWilderness videos. It is therefore important to highlight not only interesting morphology, but also the significance of the creature in its ecosystem. Framing is important in forming a meaningful conservation message (Kusmanoff et al., 2020), especially for video content in which an animal's predatory behavior is highlighted. Many threatened species have a low profile with regard to public awareness (Kidd et al., 2018) and online presence, especially for many amphibians and invertebrates (Llewellyn and Rose 2021). YouTube acts as a method to counteract these deficiencies, by rapidly spreading educational and important content on the biodiversity of the planet.

Due to the growth in follower number and video popularity (Figure 1), we suggest that videos on BraveWilderness are an important component of current and future conservation activities by showing wildlife to a diverse audience. Uploaded videos focus on the importance of wildlife, no matter how 'scary' or dangerous they may seem. This is done by discussing conservation efforts, the importance of the species and its vulnerability in an ecosystem, by clearly stating that animals were not harmed, and by showing their release back into the wild (even after a sting). As more people are made aware of an organism, the more likely they will be to care about it and so a video need not directly mention conservation efforts to be a useful conservation tool.

A unique morphology or behavior can be enough to gain interest in conservation (Kidd et al., 2018); this interest also links to popularity in YouTube videos. A large portfolio such as BraveWilderness can be used by conservation practitioners to determine how a particular organism should be highlighted to elicit a positive public response, such that further outreach activities around a specific creature would increase conservation awareness and therefore its protection. We conclude that academics, conservation practitioners, and policy makers alike can benefit directly from observing successful social media efforts. It is also beneficial for academics to directly interact with and contribute to social media outlets, with YouTube being an excellent platform for highlighting conservation to a large and increasingly diverse global audience.

ACKNOWLEDGEMENTS

This manuscript benefitted from reviews by Dr. Peter J. McCarthy. Thanks goes to Coyote Peterson for being brave and staying wild.

AUTHOR CONTRIBUTIONS

MV contributed to the manuscript write up, obtained data, and created the figures. MA contributed to the manuscript write up and revisions. HNH conceived the study, wrote the manuscript, and edited the revisions.

CONFLICT OF INTEREST

None

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Data accessibility:

Data analyzed is freely available: <https://www.youtube.com/c/BraveWilderness/about>. Further details about user metrics and demographics are withheld to preserve user privacy.

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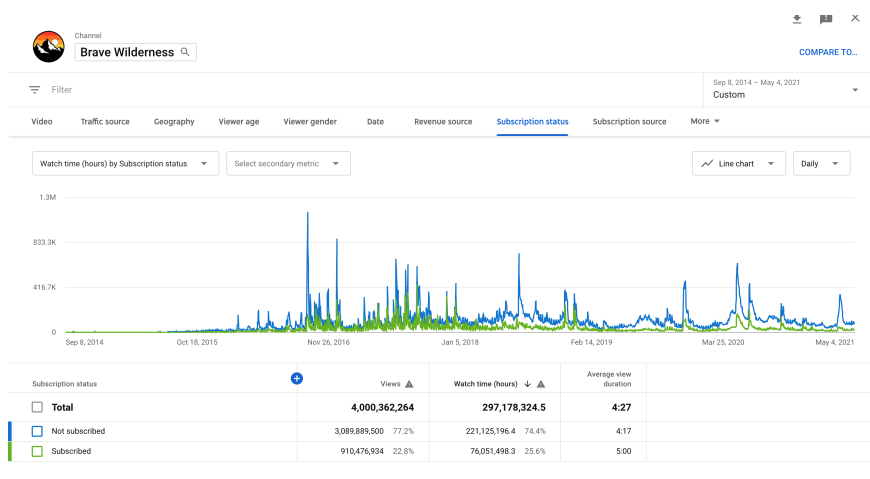
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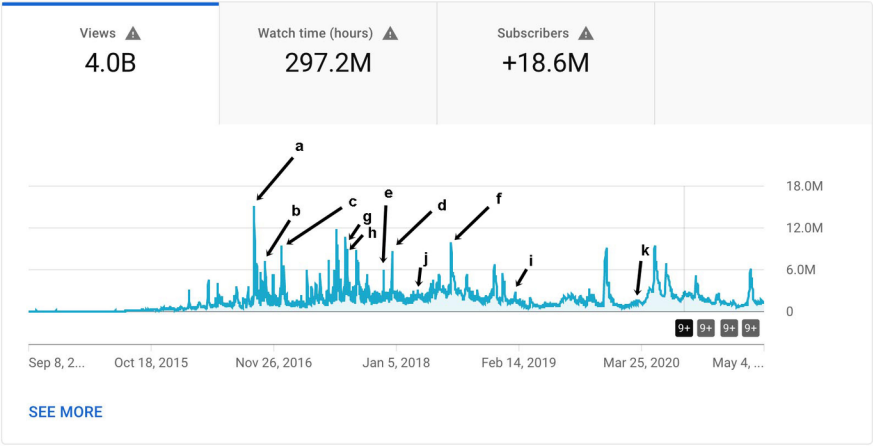
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