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Cover: Nile Crocodile *Crocodylus niloticus* regulating body temperature on a warm day. Digital art on Procreate by © Aakanksha Komanduri.

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ARTICLE

A comparative web-traffic analysis of three renowned wildlife conservation organisations - International Union for Conservation of Nature (IUCN), Wildlife Conservation Society (WCS) and World Wide Fund for Nature (WWF)

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Abstract: The International Union for Conservation of Nature (IUCN), Wildlife Conservation Society (WCS), and World Wide Fund for Nature (WWF) are among the leading wildlife organisations that provide significant scientific information. These organisations, through their highly data-centric and interactive websites, communicate conservation and have been accessed by an audience base across the globe. Each part of the world encounters a diverse range of conservation-related issues. Analysing the communication strategies of each of these websites can provide key insights into the domain of wildlife conservation pedagogy. This study is based on quantitative web analytics utilising web tools and software that provide insights such as attributes and visual portraits on the engagement of the audience of these websites, trending search topics, audience engagement, learning behaviours, website performance, user behaviour analysis, and communication strategies. WWF recorded the highest monthly visits (≈ 1.56 million) but the highest bounce rate (68.63%), whereas IUCN recorded the longest mean visit duration (2 min 21 s). The findings describe how the three organisations' publicly reported web-traffic profiles differ in audience geography, search-term composition, social-referral mix and engagement metrics and discuss the limits of inferring audience intent from aggregate analytics.

Keywords: Audience engagement, communication strategy, International Union for Conservation of Nature, web analytics, websites, wildlife conservation, Wildlife Conservation Society, World Wide Fund for Nature.

ସାରାଂଶ: ଇଣ୍ଟରନ୍ୟାସନାଲ ୟୁନିଅନ୍ ଫର୍ କଞ୍ଜରଭେସନ୍ ଅଫ୍ ନଚେର(IUCN), ୱାଇଲ୍ଡଲାଇଫ୍ କନଜର୍ଭେସନ୍ ସୋସାଇଟି (WCS) ଏବଂ ୱାର୍ଲ୍ଡ ୱାଇଡ୍ ଫଣ୍ଡ ଫର୍ ନଚେର (WWF) ହେଉଛନ୍ତି କେତେକ ଅଗ୍ରଣୀ ବନ୍ୟପ୍ରାଣୀ ସଂଗଠନ, ଯେଉଁମାନେ ଗୁରୁତ୍ୱପୂର୍ଣ୍ଣ ବୈଜ୍ଞାନିକ ତଥ୍ୟ ପ୍ରଦାନ କରନ୍ତି। ଏହି ସଂଗଠନଗୁଡ଼ିକ ସମୋନଙ୍କର ତଥ୍ୟ-କନେ୍ଦ୍ରିକ(data-centric) ତଥା ଇଣ୍ଟରାକ୍ଟିଭ୍ ୱେବସାଇଟ୍ ମାଧ୍ୟମରେ ସଂରକ୍ଷଣ ସମ୍ବନ୍ଧୀୟ ବାର୍ତ୍ତା ପ୍ରସାରଣ କରନ୍ତି ଏବଂ ବିଶ୍ୱବ୍ୟାପୀ ଏକ ବିସ୍ତୃତ ଦର୍ଶକ ଶ୍ରେଣୀ(audience base) ଦ୍ୱାରା ଏହା ବ୍ୟବହାର କରାଯାଇଛି। ବିଶ୍ୱର ପ୍ରତ୍ୟେକ ଅଞ୍ଚଳ ବିଭିନ୍ନ ସଂରକ୍ଷଣ-ସମ୍ବନ୍ଧୀୟ ସମସ୍ୟାର ସମ୍ମୁଖୀନ ହୋଇଥାଏ। ଏହି ପ୍ରତ୍ୟେକ ୱେବସାଇଟ୍‌ର ଯୋଗାଯୋଗ ରଣନୀତି (communication strategies) ବିଶ୍ଳେଷଣ କରିବା ଦ୍ୱାରା ବନ୍ୟପ୍ରାଣୀ ସଂରକ୍ଷଣ ଶିକ୍ଷାଦାନ (pedagogy) କ୍ଷେତ୍ରରେ ଗୁରୁତ୍ୱପୂର୍ଣ୍ଣ ଧାରଣା ମିଳିପାରିବ। ଏହି ଅଧ୍ୟୟନଟି ପରିମାଣାତ୍ମକ ୱେବ ଆନାଲିଟିକ୍ସ (quantitative web analytics) ଉପରେ ଆଧାରିତ, ଯେଉଁଥିରେ ୱେବ ଟୁଲ୍ସ ଓ ସଫ୍ଟୱେରରେ ବ୍ୟବହାର କରାଯାଇଛି। ଏଗୁଡ଼ିକ ଏହି ୱେବସାଇଟଗୁଡ଼ିକର ଉପଭୋକ୍ତା/ଦର୍ଶକଙ୍କ ସମ୍ପୃକ୍ତି (audience engagement), ଟ୍ରେଣ୍ଡିଂ ସର୍ଚ୍ଚ ବିଷୟ (trending search topics), ଶିକ୍ଷଣ ଆଚରଣ (learning behaviours), ୱେବସାଇଟର କାର୍ଯ୍ୟଦକ୍ଷତା (website performance), ବ୍ୟବହାରକାରୀଙ୍କ ଆଚରଣ ବିଶ୍ଳେଷଣ (user behaviour analysis) ଏବଂ ଯୋଗାଯୋଗ ରଣନୀତି ଭଳି ବିଭିନ୍ନ ବିଷୟ ଏବଂ ଭିଜୁଆଲ୍ ଚିତ୍ର ପ୍ରଦାନ କରିଥାଏ। WWF ସର୍ବାଧିକ ମାସିକ ପରିଦର୍ଶନ (≈୧.୫୬ ନିୟୁତ) ରକେର୍ଡ କରିଥିଲା କିନ୍ତୁ ସର୍ବାଧିକ ବାଉନ୍ସ ରେଟ୍ (୬୮.୬୩%) ମଧ୍ୟ ରକେର୍ଡ କରିଥିଲା, ଅନ୍ୟପକ୍ଷରେ ଆଇୟୁସିଏନ୍ ସର୍ବାଧିକ ହାରାହାରି ପରିଦର୍ଶନ ଅବଧି (୨ ମିନିଟ୍ ୨୧ ସେକେଣ୍ଡ) ରକେର୍ଡ କରିଥିଲା। ଏହି ଅନୁସନ୍ଧାନରୁ ଜଣାପଡ଼ିଛି ଯେ କିପରି ଏହି ତିନୋଟି ସଂଗଠନର ସାର୍ବଜନୀନ ଭାବରେ ପ୍ରକାଶିତ ୱେବ୍-ଟ୍ରାଫିକ୍ ପ୍ରୋଫାଇଲ୍ ସମୋନଙ୍କର ଦର୍ଶକଙ୍କ ଭୌଗୋଳିକ ସ୍ଥିତି (audience geography), ସର୍ଚ୍ଚ-ଟର୍ମ ଗଠନ (search-term composition), ସୋସିଆଲ୍-ରେଫେରାଲ୍ ମିଶ୍ରଣ (social-referral mix) ଏବଂ ସମ୍ପୃକ୍ତି ମେଟ୍ରିକ୍ସ (engagement metrics) କ୍ଷେତ୍ରରେ ଭିନ୍ନ ଅଟେ ଏବଂ ଏହା ସହିତ ଏକତ୍ରିତ ବିଶ୍ଳେଷଣ(aggregate analytics) ରୁ ଦର୍ଶକଙ୍କ ପ୍ରକୃତ ଉଦ୍ଦଶ୍ୟେ ଅନୁମାନ କରିବାର ସୀମା ବିଷୟରେ ଆଲୋଚନା କରେ।

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INTRODUCTION

In the world wide web ecosystem, search engines facilitate information-seeking behaviour for day-to-day activities, data, and knowledge. Global internet usage has grown substantially in recent decades, intensifying both the volume of online conservation information and the challenge of identifying credible sources. Search engines return large volumes of information of varying quality, creating challenges for users seeking reliable scientific data on wildlife and conservation (Cuan-Baltazar et al. 2020). Credible websites characterized by institutional affiliation, evidence-based content, and transparent governance represent a small but disproportionately influential subset of this online information environment (Guess et al. 2020). Few websites of each industry are referred to as the most reliable source with negligible misinformation (Guess et al. 2020). The online information disseminated through some of the leading organizations is backed up by its content, website design, navigation, algorithmic architecture, and user engagement (Anwyl-Irvine et al. 2021). It becomes much more intricate when the community tries to look for scientific information about wildlife (Cuan-Baltazar et al. 2020). Conservation and protection are the key measures to help nature grow and recover from habitat degradation. There are various stakeholders, including government and Non-Governmental Organisations (NGOs), who work toward conservation and communicate conservation (Pati & Kumar 2023). These three organizations were therefore selected as case studies for the present analysis (see Methods for full selection criteria).

Despite the growing use of digital platforms in conservation communication, limited peer-reviewed research has systematically evaluated the online audience engagement strategies of major wildlife NGOs using web analytics data. It remains unclear how these organizations differ in terms of digital reach, audience demographics, and content emphasis, information that could help conservation practitioners optimize online communication. This study addresses that gap by applying SimilarWeb web analytics to compare IUCN, WCS, and WWF across quantitative metrics of audience engagement, geographic distribution, and search behaviour.

The IUCN was established in 1948 and as of 2024, it is one of the leading wildlife organizations in the world, collaborating with governments, NGOs, environmental networks, researchers, and scientists to promote conservation and sustainable development. IUCN focuses on biodiversity conservation, climate change mitigation, and habitat protection. It is internationally recognized for the IUCN Red List of Threatened Species, a globally authoritative index of extinction risk. On the other hand, WCS strikes a balance between community needs and conservation objectives. It aims to conserve 14 priority (large-scale) wildlife ecosystems in the world, which represent half of the world's biodiversity. It works closely with tourists, travelers, and activists to achieve conservation-related goals. They invest in zoological gardens, central parks, and movies to promote conservation. With various on-ground activities and online initiatives, they create engaging conservation approaches for the users. Similarly, WWF is a pioneer in six global environmental concerns, namely forest, marine, freshwater, wildlife, food, and climate. They work across 200 ecologically valuable regions and are famous for using modern communication strategies (Martin 2005). WWF reports working with more than six million supporters across 100+ countries on its mission to conserve nature and reduce threats to biodiversity.

Accordingly, among various organisations, the three highest-traffic wildlife conservation websites IUCN, WCS and WWF selected based on global web traffic rankings from SimilarWeb (see Methods) are taken into consideration to understand and analyze the audience engagement, demographics, geography and various wildlife-related trending topics based upon the metadata analysis conducted in SimilarWeb software. The three websites were selected based on the following objective criteria: (1) global organizational scope; (2) ranking among the top three wildlife-focused domains by monthly visitor count as recorded by SimilarWeb during the study period; and (3) availability of complete web analytics data for the study timeframe. Web traffic statistics are one of the most widely accepted methods for shortlisting a website. The study refers to the average number of posts or metrics of popularity (Stringham et al. 2021).

The website's selection also varies depending on the desired information required. Leads of websites are generated by social media that promote wildlife-related topics and increase website traffic. Each of these websites has various attributes that differ, and the community refers to one of these for a specific requirement. The relevant keywords then help the websites generate a larger audience and maintain their hold among the huge set of information floating across the search engine.

Although conservation organizations increasingly rely on websites as primary communication channels,

few studies compare how leading global organizations differ in the audiences they reach and the topics those audiences search for. This study addresses that gap by comparing the publicly reported web-traffic profiles of IUCN, WCS, and WWF, asking whether organizations with different missions show measurably different audience geographies, search-term compositions, and engagement metrics. Characterizing these differences offers conservation practitioners a baseline for understanding which audiences each organization currently reaches online, and where outreach gaps may exist.

MATERIALS AND METHODS

Data were extracted from SimilarWeb on 30 April 2024. For each of the three websites (iucn.org, wcs.org, worldwildlife.org), the following metrics were recorded for 01 February–30 April 2024: total monthly visits, average visit duration, pages per visit, bounce rate, total page views, audience geographic distribution (top five countries by traffic share), social traffic sources (percentage by platform), and industry distribution categories. Values represent estimated monthly averages as reported by SimilarWeb. Top search terms were identified using the SimilarWeb 'Search' module and visualized as word clouds using Mentimeter online platform. No inferential statistical analyses were performed; all results are reported descriptively.

The research begins with data acquisition using SimilarWeb, a commercial web analytics platform that generates estimated traffic data based on a proprietary panel and algorithmic modelling. It is important to note that SimilarWeb data were estimates rather than direct measurements; the platform does not publish confidence intervals for individual site estimates, which is acknowledged as a limitation of the present study. SimilarWeb was selected because it provides standardized, multi-metric web traffic data across multiple organizations simultaneously, enabling direct comparison. Its use in web analytics and digital communication research is well established (Weischedel & Huizingh 2006; Tarafdar & Zhang 2008). However, it is important to recognise that the initial phase of this study involves extensive data cleaning and preparing datasets for more efficient analysis. Given the wide variety of formats used by different organizational websites, manually cleaning and formatting the data is crucial for eliminating inconsistencies and ensuring a uniform set of information for analysis. All traffic metrics were exported directly from SimilarWeb's web interface; no web scraping was performed. Exported fields were checked manually for completeness and formatting consistency before analysis.

With the rise of dynamic websites replacing static ones, it is essential to understand how these advancements impact communication strategies in wildlife organizations. These organizations utilize websites as their main platform to inform the public, raise awareness, and foster engagement with conservation efforts (Weinreich et al. 2008). Through web optimization strategies, organizations can enhance user experience, increase their reach, and convey information more effectively (Weischedel & Huizingh 2006). Websites play a critical role in attracting visitors, informing them about conservation projects, and encouraging support for wildlife protection through various channels (Tarafdar & Zhang 2008).

The three organizations were selected because each has a global remit, an English language site, and a comparable conservation mission. Data source used was SimilarWeb, covering February–April 2024. Metrics extracted were monthly visits, mean visit duration, pages per visit, bounce rate, page views, gender split, country traffic share, social-referral share, industry/ category distribution, and top search terms. Search terminology word clouds were generated from SimilarWeb's reported search terms.

Scope and Limitation

Search-term data indicate the terms users searched for before or after visiting these websites, but cannot reliably establish user intent, motivation or organizational communication strategy. This limitation impacts the ability to ensure that the analysis of wildlife communication is based solely on credible sources. The presence of misinformation can skew understanding and may affect the validity of the findings. The selection of websites for analysis was based on subjective criteria, such as metadata from SimilarWeb and general popularity metrics. Manual data collection is time-intensive and prone to human error, which can impact the reliability of the data. The challenge of integrating data from different website formats and ensuring its accuracy further complicates the analysis. These methods often operate in a legal grey area and may breach privacy or data protection regulations (Zimmer 2010). Ethical constraints around acquiring sensitive or unauthorized data, especially from the dark web, pose additional challenges (Tai 2012). Ensuring ethical compliance while collecting and analyzing data remains

a critical concern.

Ethical Considerations and Legal Framework

SimilarWeb provides aggregated, anonymized, publicly available estimates of website traffic. No personal data were collected, no human participants were involved, and no web scraping was performed; therefore, no ethics approval was required (Sula 2016).

Research Questions

The central aim of this research is to understand how key wildlife conservation websites engage their audiences and disseminate information.

These research questions are grounded in a web analytics framework for evaluating organizational digital communication effectiveness (Tarafdar & Zhang 2008; Weinreich et al. 2008), in which audience demographics, geographic reach, content discovery terms, and social traffic serve as proxy indicators of communication performance. Together, they reflect the breadth, depth, and thematic orientation of audience engagement across the three organizations. To achieve this, the following research questions are posed:

R1: What are the primary demographics of users accessing these websites, and how do they engage with the content?

R2: Which countries around the world follow these websites for seeking information?

R3: What conservation-related topics are most frequently searched on these websites?

R4: How does social traffic influence engagement on these wildlife conservation platforms?

Data Collection Process

This is a descriptive quantitative web-analytics study. Differences between the three organisations are reported descriptively; no inferential statistics were applied because the data are population-level estimates for single websites. Using SimilarWeb, the researcher gains access to valuable data on web traffic, audience behaviour, and geographical distribution of users. The tool was selected for its robust features, which provide comprehensive insights into the reach and effectiveness of the websites being studied. Quantitative analysis focuses on measuring metrics like visitor count, engagement rates, and the geographic location of the audience, which allows for a comparative study of web traffic and audience demographics. On the qualitative side, the content quality of each website is assessed based on credibility, alignment with scientific research, and clarity in communication. The comparative analysis of these three wildlife websites (WWF, WCS, IUCN) allows the researcher to identify patterns in how different organizations communicate their conservation efforts and engage their online audiences.

Timeframe and Research Duration

This study spans a period of three months, from February to April 2024, to ensure that a representative sample of data is collected. This three-month window provides a snapshot of website engagement during this specific period. It is acknowledged that a three-month duration is insufficient to fully capture annual seasonal variation in web traffic; findings should therefore be interpreted as representative of this particular period rather than as annual trends. It also allows sufficient time to conduct both quantitative and qualitative analyses, ensuring that the study's findings are both reliable and actionable.

RESULTS

The following interpretations are descriptive inferences from observed traffic patterns. SimilarWeb data reflect user behaviour metrics and cannot directly establish organizational strategy, user intentions, or communication effectiveness. The IUCN had significant searches for research, species, biology, social networks, conservation, books, references, and publications (refer to Figure 1). The commonly searched words among the other two websites (WCS & WWF) are news, jobs, publication, and community. The most frequent search terms associated with the IUCN site were research, species, biology, conservation, books, and publications. IUCN's traffic patterns suggest a predominantly science-oriented audience. IUCN maintains multiple organizations, such as the IUCN Red List, Green List, and many more that provide universally accepted information about species and nature.

The analysis of search terms for IUCN compared to WCS and WWF reveals a distinct focus of user interest. IUCN's search terms, such as research, species, biology, and conservation indicate a strong inclination towards in-depth scientific research and authoritative studies on biodiversity and sustainability. This contrasts with the WCS and WWF, where commonly searched terms include news, jobs, and community, reflecting a broader interest in current studies, career opportunities, and engagement with conservation communities.

These differences indicate that the search terms associated with IUCN were more research oriented

Figure 1. Word cloud of trending searches and key words on the IUCN website.

than those associated with WCS & WWF. Its resources, including the IUCN Red List and Green List, are globally recognized for their rigorous standards and comprehensive data on species and ecosystems.

The WWF had audiences who searched for education, magazines, nature, shopping, science, environment news, sustainability, activism, charity, blogs, and wildlife mostly (refer to Figure 2). This organization is charitable and works for various communities across 100+ countries to generate funds and provide a deep immersion experience through adaptation schemes. WWF provides a deep understanding of various charismatic species and tries to conserve wildlife using these species as umbrella species. The organization works mostly on content creation and distribution, resulting in trending searches such as shopping, magazines, journals, and books. The website contains a designated active link to help viewers sponsor or donate to a cause. The website also offers a variety of artefacts such as wildlife magnets, badges, books, and magazines for sale. They cover mostly charismatic species.

The search terms associated with the WWF such as education, magazine, nature, shopping, and activism highlight its focus on engaging the public through diverse content and fundraising efforts. WWF's strategy involves leveraging charismatic species to drive awareness and support for conservation. The frequent searches related to shopping, magazines, and blogs suggest that WWF actively promotes merchandise and educational materials as part of its outreach. This aligns with its mission to generate funds and foster deeper public engagement with conservation issues. The presence of links for donations and a range of merchandise for sale indicates WWF's dual approach: advancing conservation through direct funding and enhancing public interest via engaging content and products.-Search terms and on-site content for WWF frequently referenced charismatic species, such as the Tiger and Snow Leopard, alongside merchandise and donation pages.

WCS delivered the most different trending searches word cloud with searches such as movies, zoo, credit cards, shopping, travel, news, and retail stores (refer to Figure 3). This website had a significantly low conservation-based search, with 'environment activism action' being the only trending search. This website has a lot of active links for wildlife bookings and participation, resulting in searches based on travel, credit cards, movies, zoos, and shopping. Active links of different offers and ads lead to the search of topics such as English news, online US news, email news online, Google Sign, search engines, web search live, and social networks to a large extent. WCS looks for individuals who participate in fieldwork and experience conservation, wildlife or nature-based issues in a practical environment.

WCS's trending searches predominantly commercial and recreational terms such as zoos, travel, movies, and shopping suggest an audience oriented toward experiential wildlife engagement rather than

Figure 2. Word cloud of trending searches and key words on the WWF website.

Figure 3. Word cloud of trending searches and key words on the WCS website.

conservation-focused information-seeking. The low incidence of conservation-related searches, with 'environment activism action' being the sole exception, underscores WCS's strategy of engaging audiences through experiential and commercial avenues rather than through activism or scientific discourse.

The presence of numerous active links for bookings and participation in wildlife experiences suggests that WCS targets travelers seeking immersive encounters with nature. This approach is reflected in the popular searches related to travel, credit cards, and retail stores. WCS's search patterns are consistent with a tourism- and experience-oriented audience, though the available traffic data were unavailable to draw conclusions about whether this reflects deliberate organizational strategy or user self-selection. The emphasis on offers, ads, and experiential content aligns with its goal of engaging a broader audience through appealing,

Table 1. Top five industry distribution of data of IUCN.

Industry Distribution	IUCN.org
Computers Electronics and Technology> Social Network	12.40%
Law and Government> Government	8.23%
News and Media	8.18%
Science and Education> Science and Education - Other	7.08%
Science and Education> Environmental Science	6.56%
Others	57.55%

Table 2. Top five industry distribution of data of WWF.

Industry Distribution	WWF.org
Science and Education > Education	11.02%
News and Media	10.15%
Science and Education > Environmental Science	7.13%
Computers Electronics and Technology	5.20%
Law and Government > Government	4.99%
Others	61.50%

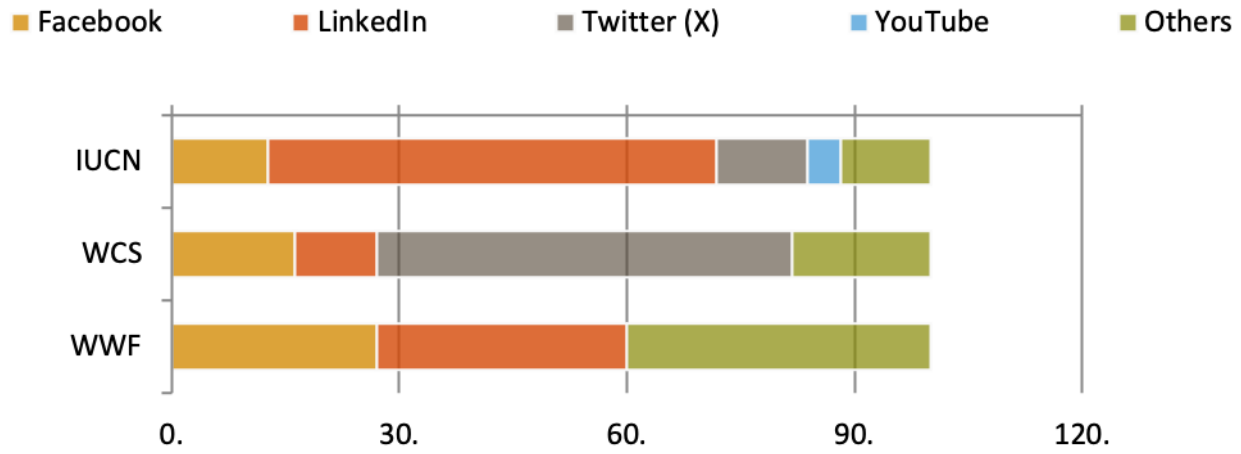

Figure 4. Social traffic of IUCN, WCS, & WWF.

practical experiences rather than through traditional conservation messaging.

Industry Distribution Analysis

The data distribution analysis for the IUCN reveals a significant emphasis on social networking platforms, which account for 12.40% of the data distribution. This prominence in the social networking category indicates IUCN's strategic focus on leveraging digital and social media channels to reach and engage with a broad audience. Given that IUCN is heavily involved in policymaking and governance, this high percentage underscores the organization's commitment to using these platforms for advocacy, information dissemination, and stakeholder engagement (refer to Table 1). The substantial allocation of data to social networking reflects IUCN's recognition of the importance of digital communication in modern conservation efforts. By prioritizing social media, IUCN can effectively communicate its standards, policies, and conservation messages to a global audience, enhancing its visibility and influence.

Following social networking, the data distribution in 'Law and Government' at 8.23% highlights IUCN's role in shaping conservation policies and its reliance on official channels for policy-related information. The third-highest data distribution in 'News and Media' (8.18%) further emphasizes the importance of media in amplifying IUCN's messages and updates. The comparatively lower percentage for each Science and Education sub-category (7.08% and 6.56%) is individually lower than 'Social Networking' (12.40%), and 'Law and Government' (8.23%), indicates that within IUCN's observed industry distribution, traffic is proportionally more concentrated in social and policy-related categories than in educational content categories during the study period. This approach aligns with IUCN's mission to impact policy and public awareness, leveraging its substantial presence on social platforms to drive engagement and influence in conservation matters.

The WWF demonstrates a notable emphasis on science and education, with 11.02% of its content allocated to this category, and an additional 7.13%

Figure 5. Audience engagement – top countries.

dedicated specifically to Environmental Science, totaling 18.15%. This substantial focus highlights WWF's commitment to disseminating scientific knowledge and educational resources related to environmental conservation. Despite the IUCN having a more prominent role in scientific research, WWF's considerable investment in Science and Education underscores its strategic objective to educate the public and stakeholders about conservation issues through accessible and impactful content.

The significant 10.15% allocation of data to the news and media further illustrates WWF's strategy of using media to amplify its research findings and educational initiatives. This focus on media outreach complements their educational efforts by ensuring that conservation messages reach a broad audience through various channels, enhancing public engagement and awareness.

In contrast, the relatively lower percentages for computers, electronics, technology (5.20%), and Law & Government (4.99%) suggest that while WWF does address technological and policy aspects, these are less central to their primary mission compared to their educational and media efforts. This distribution indicates WWF's strategic prioritization of science-based content and public education, reflecting its commitment to fostering informed environmental stewardship and leveraging media to broaden its reach and impact in the conservation arena (refer to Table 2).

The WCS shows a distinctive approach in its data distribution across various sectors, with a primary focus on News and Media, which accounts for 12.78% of their content. This indicates a strategic emphasis on leveraging media platforms to engage the public and disseminate information about wildlife conservation. The substantial investment in News and Media reflects WCS's commitment to keeping its audience informed about current events, updates, and conservation efforts through widely consumed channels. In addition to its media focus, WCS allocates 6.95% of its data to Law and Government, highlighting its involvement in policy-related matters and its role in shaping and advocating for environmental legislation. This is complemented by a 5.94% allocation to Computers, Electronics, and Technology, which suggests that WCS also engages with digital tools and platforms, albeit to a lesser extent compared to News and Media.

One notable aspect of WCS's data distribution is its 4.58% allocation to Finance. This is unique among the three organizations analyzed, indicating that WCS integrates financial aspects into its outreach strategy. This allocation suggests a focus on financial engagement, possibly through fundraising or financial support mechanisms. The presence of such a significant percentage in Finance underscores WCS's approach to driving financial contributions and support through its media and social networking efforts (refer to Table 3). Overall, the data distribution reflects WCS's strategy of combining media outreach with financial engagement. By prioritizing News and Media and leveraging social networking platforms, WCS effectively communicates its conservation messages and engages with its audience. This approach likely enhances public awareness and support while facilitating financial contributions to further its conservation goals. The emphasis on media and finance illustrates a unique strategy for balancing information dissemination with financial sustainability.

Social Media Traffic

The social traffic of these three websites depicts very different strategies followed by each of them (refer to Table 4 and Figure 4). IUCN uses LinkedIn the most for social presence, whereas WCS and WWF use Twitter (X) and other platforms more, respectively. IUCN communicated through almost all social platforms:

Metric	iucn.org	wcs.org	worldwildlife.org
Monthly visits	509,306	467,649	**1.555M**
Visit duration	**00:02:21**	00:01:07	00:01:37
Pages per visit	**2.64**	2.06	2.51
Bounce rate	**58.32%**	62.46%	68.63%
Page Views	1.344M	961,436	**3.910M**

Figure 6. A comparative website audience engagement of IUCN, WCS, & WWF.

59.02% via LinkedIn, 12.76% Facebook, 11.96% Twitter (X), and 4.46% YouTube, with the remaining 11.8% spread across other minor platforms such as WhatsApp. (February-April 2024).

WCS's communication strategy is to reach 54.75% of the audience through Twitter. Unlike IUCN, the organization uses LinkedIn for 10.83% and Facebook for 16.19% of its social traffic to communicate with their audience. No measurable YouTube referral traffic was recorded for WCS between February and April 2024. This organization targets consumers who are active on Twitter to showcase their conservation-related matters and targets financial support more than the IUCN and WWF.

Social traffic to WWF.org was primarily driven by LinkedIn (32.89%) and Facebook (27.06%). Twitter data for WWF were unavailable in SimilarWeb during the study period. The large proportion attributed to other platforms (40.05%) limits precise interpretation of WWF's social media engagement profile. No measurable YouTube social traffic was recorded for WWF.org during this period.

Each of the organizations used different strategies and platforms to communicate with their target audience and was successful enough to have a steady growth in social traffic through the months.

The top five countries are the United States with 38.97% of traffic share, followed by India with 6.07%, United Kingdom with 3.87%, Canada with 2.88% and Mexico with 2.81% (refer to Figure 5). The United States accounted for the highest combined traffic share (38.97%) across the three websites. The reasons for this geographic distribution were not assessed in the present study and may reflect multiple factors beyond the scope of this dataset. WWF has the most traffic share split among the three in all five top countries. It is surprising to witness the massive traffic share WWF has and the impact it must have created over time. WWF has 74.4% of the traffic share in Mexico, followed by the United States with 67.9%, 65.8% traffic share in Canada, 60.2% in the United Kingdom and 57.9% in India. WWF demonstrated the highest traffic share in all five top countries during the study period, indicating broader geographic reach relative to IUCN and WCS based on SimilarWeb data. IUCN holds 33.0% of the traffic share in India, followed by the United Kingdom at 25.8%, 24.0% in Mexico, 18.9% in Canada and a 5.4% traffic share in the United States.

Table 3. Top five industry distribution of data of WCS.

Industry Distribution	WCS.org
News and Media	12.78%
Law and Government > Government	6.95%
Computers Electronics and Technology > Social Network	5.94%
Computers Electronics and Technology > Programmed Content	5.11%
Finance > Banking Credit and Lending	4.58%
Others	64.65%

WCS has the least traffic share in these five top countries, with 26.7% being the highest in the United States. WCS has a traffic share of 15.3% in Canada, followed by 13.9% in the United Kingdom, 9.1% in India and the least in Mexico with a 1.6% traffic share. This comparative study would provide overall website engagement over three months (February–April 2024). The measure criteria are monthly visits, average visit duration, pages per visit, bounce rate, and page views (refer to Figure 6).

IUCN provides their audience with informative and engaging content, helping them get the best visit duration

Figure 7. Demographic analysis of audience engagement (IUCN, WCS, & WWF).

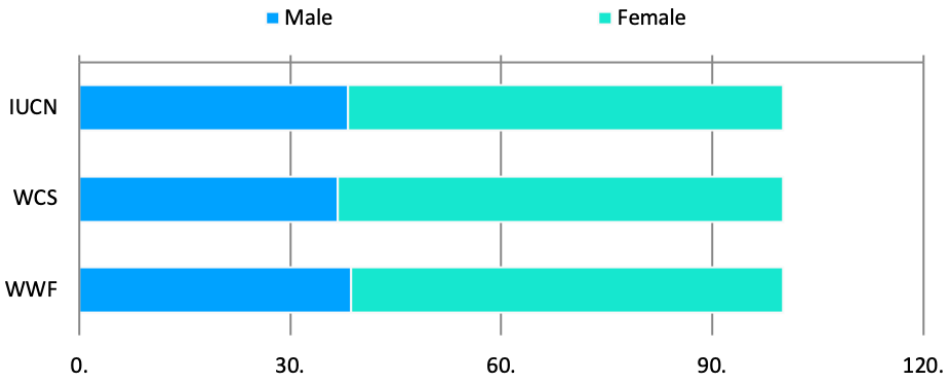

Table 4. Social traffic data of IUCN, WCS, & WWF.

Organizations	Facebook	LinkedIn	Twitter (X)	YouTube	Others
IUCN	12.76%	59.02%	11.96%	4.46%	11.80%
WCS	16.19%	10.83%	54.75%	0	18.23%
WWF	27.06%	32.89%	NA	0	40.05%

of 2 minutes and 21 seconds over 2.64 pages surfed in a single visit. IUCN manages to hold the audience's attention and provides the necessary information. The bounce rate is low compared to the other two organizations. IUCN recorded 509,306 monthly visits and 1.344 million page views over the study period. It indicates very high audience engagement relative to a smaller number of monthly visits.

WCS website lags in all categories, except bounce rate is slightly better than WWF. WCS recorded 467,649 monthly visits and the mean visit duration of 1 minute 07 seconds. WCS recorded the fewest pages per visit (2.06) and page views of 961,436 of the three sites.

WWF has the highest number of monthly visits at 1.56 million and the highest number of page views with 3.910 million in three months. WWF recorded the highest bounce rate (68.63%) and an average visit duration of 1 minute 37 seconds. While these metrics indicate that a large proportion of visitors exited after viewing a single page, bounce rate alone cannot support conclusions about content quality. High bounce rates may also reflect direct-access behaviour or single-page goal completion.

The three websites project a very similar gender-based engagement, where females make up more than 60% of each of the websites. IUCN has a 38.26% male audience. WCS has 36.82% males, followed by WWF with 38.61% males as their website audience. Female audiences were recorded more in the three months, with 61.74% with IUCN, 63.18% with WCS, and 61.39% in WWF (refer to Figure 7).

DISCUSSION

The results reveal a trade-off between audience reach and engagement depth. IUCN's higher engagement-quality metrics despite a lower monthly visit volume, and WWF's high traffic volume alongside a relatively higher bounce rate, exemplify this inverse relationship. WWF demonstrates a contrasting approach with a heavy emphasis on Science and Education (18.15%), indicating a robust commitment to educational outreach and scientific knowledge dissemination. The organization's focus on charismatic species and the substantial allocation of resources to News and Media (10.15%) reflects its strategy of using compelling narratives and media to drive public engagement and fundraising efforts. WWF's integration of shopping and charitable initiatives into its website, alongside educational content, reveals a dual approach: advancing conservation through public engagement and leveraging merchandise sales to fund its activities. This strategy underscores WWF's emphasis on blending activism with commercial outreach to foster deeper connections with a broader audience. WWF's integration of merchandise,

activism, and education is consistent with the dual-mode conservation communication strategy (Martin 2005).

WCS exhibits a unique strategy by focusing predominantly on News and Media (12.78%) and integrating financial aspects into its outreach (4.58%). The heavy emphasis on media and commercial elements such as travel and retail indicates WCS's strategy to attract tourists and generate revenue through immersive wildlife experiences. This approach contrasts with the more traditional conservation messaging of IUCN and WWF. WCS's relatively low focus on conservation-specific content and higher engagement with tourism and retail suggest a model that combines conservation with consumerism. The inclusion of finance and travel-related content highlights WCS's strategic focus on engaging a financially contributing audience through direct interactions with wildlife. WCS's tourism-oriented engagement model is consistent with experiential conservation communication approaches documented by Weinreich et al. (2008).

The comparative analysis of these organizations reveals divergent strategies in digital engagement. IUCN's strength lies in leveraging social media for policy advocacy and broad outreach. WWF excels in combining scientific education with engaging media and fundraising efforts, while WCS integrates tourism and financial engagement into its conservation strategy. Each organization's approach reflects its broader mission and audience engagement goals, offering insights into how digital platforms are used to advance conservation objectives. The data distribution also highlights regional differences in audience engagement, with WWF showing a strong presence in Mexico and the United States. This geographic disparity underscores the varied impacts of these organizations' digital strategies across different regions. The substantial traffic share for WWF in Mexico suggests successful localized outreach, while WCS's lower traffic in these regions reflects a more niche audience. The analysis underscores the distinct website communication strategies of IUCN, WWF, and WCS. While IUCN emphasizes scientific and policy-driven engagement, WWF integrates educational content with consumer-driven outreach, and WCS focuses on experiential and financial engagement. These approaches reflect each organization's strategic priorities and offer valuable insights into how digital platforms can be utilized to achieve diverse conservation goals.

CONCLUSION

The study showcased various strategies for promoting and communicating conservation across different platforms. The researcher considered various key factors to find out how web metrics can differ significantly and still help organizations get the desired reach. The top three leading wildlife organizations (IUCN, WCS, & WWF) were taken into consideration to prove the same. SimilarWeb data for February–April 2024 reveals distinct digital engagement profiles for each organization. IUCN's traffic was characterized by higher per-visit engagement (longest visit duration, lowest bounce rate) and science-oriented search terms. WWF recorded the highest overall traffic volume, the greatest geographic reach, and the strongest emphasis on Science and Education in its industry distribution. WCS showed the lowest combined traffic share and a predominance of tourism and retail-related search activity.

Industry distribution of IUCN indicated that the website is very much inclined towards social network promotion and has most of the information disseminated through social network platforms. The organization also worked on government policies and research-based activities, making it prominently visible in the science and education industry. WWF also followed a similar approach and has good visibility in Science and Education. WCS had a simpler strategy and targeted a niche audience through Twitter. They projected a variety of ads and promotions of fun-filled conservation-related experiences. They had 4.58% of industry distribution under finance, making it inclined towards direct payment from the audience.

The findings pointed strongly towards the social media platforms. To get a much more informative insight into the communication strategies, Facebook, LinkedIn, Twitter, YouTube, and other platforms were analyzed. The majority of the organizations used LinkedIn and Twitter to keep the audience informed. WWF used Facebook as well for communication.

To understand the audience and their origins, the researcher analyzed audience engagement across the top five countries. WWF had the highest engagement throughout the five countries, ranging from 57.9% in India to 74.4% in Mexico. WCS has the least traffic share in four of the five top countries; the exception is the United States, where IUCN holds the smallest share. Another important question was to understand the number of people being involved in three months and their particulars to understand the audience's

engagement in detail. A comparative website study was done to understand the audience's engagement in the top three wildlife organizations. WWF recorded the highest visit volume, whereas IUCN recorded the longest visit duration, the most pages per visit and the lowest bounce rate. Most of the audience were females, with more than 60% for each of the organizational websites.

Future Research Directions

Future research could benefit from incorporating additional data sources, such as user feedback, surveys, and qualitative assessments of website content. This would provide a more holistic view of how information is perceived and utilized by different audiences. Analyzing the quality and impact of the content disseminated by these organizations could offer deeper insights. As web technologies evolve, future research should consider the impact of new digital tools and platforms on information dissemination. Exploring the use of emerging technologies, such as artificial intelligence and interactive media, could offer insights into how these innovations shape audience engagement and conservation efforts.

Developing a robust ethical framework for web scraping and data collection in research could address current challenges. Establishing clear guidelines for handling sensitive data and ensuring compliance with legal and ethical standards would enhance the integrity of future studies. Future research should focus on assessing the real-world impact of online conservation efforts. Measuring how digital engagement translates into tangible conservation outcomes, such as increased funding, policy changes, or improved conservation practices, would provide valuable insights into the effectiveness of different communication strategies.

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