

# Multitasking Moose Migration: Examining media multimodality in slow-TV nature programming

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## ABSTRACT

Media multitasking has become an integrated part of much media consumption. While some celebrate the practice for activating the viewer and connecting them to virtual others, perhaps discussing the show in real-time, critics point to cognitive costs and reduced productivity. A perhaps more scathing critique has been added to those multitasking while watching nature documentaries: you are already consuming nature through a screen, but now your focus is further fragmented across multiple apps. The implication is that this is not an authentic way of experiencing nature, at a time—the Digital Anthropocene—when direct nature experiences dwindle. In this study, we examine viewers' engagement with different sorts of media and 'real-life', physical multitasking during a slow-TV nature documentary, The Great Moose Migration in Sweden. We ask what these tasks mean not only for one's enjoyment and relaxation, but more broadly for nature engagement in the Digital Anthropocene, and connection to others over nature as something shared. Through surveys and digital ethnography of the Great Moose Migration, our research shows how multitasking around nature contributes to a potentially transformative experience. It is a viewer experience that is at once personal through increased customization options and layering of different activities. Second, it is communal in terms of connecting diverse audiences on platforms. Our contribution is in showing that taskscapes are now becoming multi-taskscapes, which comprise both physical and digital tasks over nature. These multi-taskscapes are actively shaped by users who engage with them. This changes both the media landscape and the way we engage with nature.

## 1. Introduction

Multiscreening is a type of multitasking that is focused on parallel use of, or task switching between, digital devices [1]. Today, many users now multiscreen as they watch television [2]. Indeed, digital devices have profoundly changed how audiences consume media content, whether reality TV shows, nature documentaries or Netflix dramas. Studies show that depending on the primary activity screen and the sorts of multiscreening practices, engaging multiple devices can enhance the viewing experience [3]. Partaking in parallel tasks such as watch parties, bingos and games can boost concentration and learning [4,5] and the social community around them can foster connection across remote viewers [6]. In this sense, multiscreening is said to hold the potential to activate the viewer [7,8].

Nevertheless, critical voices suggest that both multitasking and multiscreening while viewing TV are potentially degenerative. Critics point first to the negative effects for the viewer like cognitive overtaxing,

costs of task-switching, loss of attention span, impaired recall, and even socioemotional and sleep issues [9,10]. Second, they suggest that multitasking detracts from the experience, breaking immersion and undermining the purity of the primary activity [11,12]. Use of multiple screens is seen as especially problematic, as these screens have to compete for the same audiovisual input processing [13].

Both multitasking and multiscreening through additional devices when consuming nature and wildlife content provides an especially interesting context for this discussion. There is a growing concern that technology-mediated interactions are replacing already dwindling unmediated interactions with nature in the Digital Anthropocene [14]. The latter is often understood critically in the context of partly facilitating the extinction of experience paradigm [15,16]. In the Digital Anthropocene, technology is reshaping human relations with nature, potentially insulating them from it. Hence, layering on additional screens to an already vicarious nature experience removes the user further from an unmediated 'real' nature. Moreover, whether technological (multi-

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mediation adds to or detracts from nature experiences, both direct and vicarious, betrays a normative question: should mediated nature experiences be evaluated on the basis of how they produce ‘real-life’ outcomes, like donations to conservation, and getting people into the outdoors? Or can we value them intrinsically for immersion in the moment of consumption? If this is so, one needs to also empirically ask whether, and in what ways, multitasking of various kinds adds to or detracts from this experience.

With these questions in mind, in this study, we are concerned with the implications of multitasking in a particular phenomenon of technology-mediated nature viewing. The case involves an increasing use of community and social media app usage around and during a nature broadcast. We examine viewers tuning into to watch the slow-TV livestream *The Great Moose Migration* (GMM) airing annually in Sweden on public television in April-May since 2020. Critical questions are now being asked whether such a show will replace nature experiences with armchair ones or stimulate actual outdoor experiences [17]. Championed as being on nature’s terms, showing the everyday rhythms of the forest and, often nothing at all, the GMM is a program that has been particularly valued for its purity: ‘the real’ ‘unfiltered’ and ‘untouched’ qualities of the broadcast [18].

The challenge to maintaining this bare-bones image of the show is that each year’s iteration of the GMM unfolds with enhanced affordances for interactivity through more screens and suggested activities in the background. For example, viewers can now pin multiple angles, participate in a livechat, watch with live commentary, and participate in competitions and games to enhance their viewing. Hence, the program has become an entry for multiple tasks to be pursued in parallel, and to be viewed together with virtually present others. We ask: what tasks are these and how are they layered together? In doing so, we inquire also about any differences between multitasking on the one hand—involving a range of activities on- and off-screen, and *multi-screening* on the other hand, focused on additional devices to the TV. Previous research has approached such inquiries mainly with a view to quantifying user outcomes like satisfaction and concentration [19]. In this study, we take consequences further. We ask also: what does this way of consuming nature content mean for the merging of physical and virtual worlds in the Digital Anthropocene? What sorts of values can it produce, if any?

In order to examine multitasking over nature, we leverage Tim Ingold’s *taskspace* as point of departure and repurpose this to a *digital* taskscape which also becomes a *multi-taskspace* as several tasks are added to it. Importantly, on Ingold’s theory, taskscape describes the active dwelling in the landscape through a performance of tasks that go *beyond passive observation* [20]. Engaging in tasks involves contributing to the world, connecting with others, and partly remaking this world in the process. Applying this to the context of a largely digital—but also physically blended—world, we show how taskscape can thus be adapted to the way people dwell in and co-create digital spaces. Specifically, in these digital multi-tasksapes, like that of the GMM and its ilk of shows with similar affordances for interactivity, users are now increasingly immersed in parallel activities rather than simply consuming digital content passively. While Ingold cautioned about technology changing tasks in the environment and disembedding people from nature [21], we show that new technologies and multiple active tasks in digital multi-tasksapes can potentially *re-embed* users in nature. We also show that multi-tasksapes are a potentially more dynamic way of conceptualizing multitasking in the digital era, in terms of the exact configuration of tasks being dynamic.

We proceed as follows. First, we present a literature review on multitasking TV content in today’s media landscape, with a focus on the nature and wildlife genre. Second, we provide a method section on our study involving digital ethnography and a survey. Third, we present results as six modalities of multitasking, which shows the different levels of engagement that viewer can have at various interfaces during the GMM, and with whom. In a concluding discussion, we relate findings to digital multi-tasksapes and what they do to our engagement with

nature and wildlife.

## 2. Multitasking in nature programming

Technology has altered “the means by which we access nature, both physically and representationally” [22]. While Ingold and Kurttila [21] and others have written that technology can distort nature representations and disembed humans from nature, recent research suggests technologies may also augur nature engagement. Today a growing body of users partake in citizen science apps and initiatives enabled by platforms like Zooniverse and eBird [23]. Species identification apps, which allow users to instantly recognize and learn about flora and fauna, have further deepened this engagement with nature [24]. Another segment of users interacts with nature through video games that simulate natural environments (Truong et al. [25]) or they observe wildlife livestreams of wildlife, such as popular nest cameras of peregrines [26].

Audiences of the slow-TV genre of nature of the kind captured in the latter livestream formats is sometimes seen as getting closer to authentic nature, albeit behind a screen. Viewers of these have been found to rally in fan communities and to care to the extent of crying when animals die: “more than when their own relatives died” [27]. Some of this engagement with nature documentaries recalls Vivian Sobchack’s phenomenology of watching film. She emphasizes that film viewing is not simply a cognitive process of decoding meaning but a bodily experience that is lived out on sensory and emotional levels. Communal watching can heighten these emotions, producing moods or atmospheres across viewers. Viewers sometimes act on some of these powerful feelings. For example, a rise of digital stewards keep an eye out for danger to the animal individuals they follow, sometimes petitioning managers or rangers to intervene in nature [28].

What seems to facilitate the creation and intensification of attachment to wildlife and culturally ascribed personhoods to these animals, is having some sort of social community around the content. Studies show that when the affordances are there for them to do so, and even when they are not, users appear to enjoy participatory consumption of nature footage [29]. This can take the shape of comments, chat messages, tweets, Facebook posts or forum posts. Users generate cumulative excitement around particular action and happenings on otherwise slow livefeeds, challenge one another to games and generally fill the broadcast with buzz and backchatter [30]. This can greatly extend the lives and popularity of shows. Sometimes, these communities can even overshadow the actual engagement with the livestream [31]. Social TV of this kind, activating viewers into users, received additional popularity following covid-19, as a way for viewers to get information, entertainment and companionship remotely [32]. Research examined motives and effects for participatory viewing and found that both introverts and extroverts can find formats they are comfortable with through the security of a screen [5].

To be sure, not all multitasking while watching TV involves multi-screening per se. As contended, multiscreening is a form of media multitasking [33]. A distinction can be made between multitasking activities that pertain to the media, often multiscreening, such as engaging in a forum, livechat or following expert commentary on e.g. X over a TV event at the same time as viewing it [34]. In these instances, activities show high congruence. Wang et al. [35] discuss cases of contiguous multitasking as potentially better at task performance: Although these tasks compete for the same audiovisual input, thus risking structural interference and cognitive bottleneck [13,36], they are also proximate and share a ‘common goal’: they are all about one reality TV show, for example. Otherwise, one can watch a TV show and engage in *unrelated* analogue activities, like cleaning, knitting, working or exercising. Watching a screen and knitting proceed through different channels, “utilize multiple cognitive resource pools” (ibid., p. 110) and thus do not necessarily compete. However, their unrelatedness may make focus difficult.

Finally, research on media multitasking also considers the cognitive

tax exerted by particular formats [35]. Formats have different information modalities and flows [37]. Some media—like TV—is “externally paced” ([33] 782), while the apps and activities engaged in through e.g. tablets are often internally paced, under the user’s control [38]. This makes it theoretically possible to layer them onto one another in a way that does not exhaust cognitive resources [35]: slow-TV and a livechat, for example. While apps in mobile devices allow for user control of pace, Segijn, Voorveld, Vandeberg, Pennekamp, et al. [33] also shows that they are ‘lean-forward’ media, requiring far more behavioural responses (and motor processing) than for example a TV, which is a ‘lean-back’ media. As we will show, versions of these appear for viewers of the GMM, our case study.

### 3. Method

#### 3.1. Study design

As part of a research project investigating people’s relations to virtual wildlife, we investigate The Great Moose Migration (GMM) as a case study for multitasking over nature programming. The broadcast had some nine million viewers in the 2024 iteration, which was a 30 percent increase from the previous year. To apprehend the ways in which users engaged with the broadcast, we employ a qualitative mixed-methods study that involves a digital ethnography of the Facebook fan page and the show’s livechat. In 2024, we recorded livechat comments daily, including the number of users active in the chat and the topics discussed. By subscribing to notifications on events and animal sightings in the stream, we were able to quickly come online and capture people’s live reactions in these moments.

#### 3.2. Data collection

The digital ethnography approach [39] meant approximating a ‘lurker’ format as researchers and allowing for ‘natural data’ to emerge in the user interactions by spending several hours on the Facebook group and SVT livechat every day. Digital ethnography involves deep familiarization with the platform, its affordances, functions and social norms. This acquirement of an insider perspective is in place of quantitative data scraping or survey-based approaches on the web [40]. This required us frequenting both the Facebook group and the livechat over an extended period of time. Typically, users in the chat ranged from 300 to 3000 during particularly active moments and the evening highlights. The Facebook fan page has 75,000 members, and averaged fifty-odd threads, and hundreds of posts, per day during the 2024 broadcast. Because of the ephemeral and anonymous nature of participation in both the livechat and the Facebook page, it was not possible to gather demographic data systematically. As a result, we prioritized the topics discussed.

We also designed and distributed a survey during the spring of 2024, timed with the broadcast of The GMM. The survey targeted viewers of the program and comprised 20 questions aimed at exploring their motivations for watching, viewing habits, and relationship with nature. Respondents were recruited through multiple channels: announcements about the study were made during a series of radio interviews with one of the authors, posts on the broadcast’s Facebook fan page, and a pinned link to the questionnaire in the program’s chat room, which was actively relayed by the moderators. For the present article, we analyze responses from an open-ended question posed to a subset of 487 participants who answered “yes” to the question: Do you have any special rituals, routines, or habits when watching The GMM? Yes/No. If participants answered “Yes,” they were prompted to share how these rituals enhanced their viewing experience or made the show more meaningful. This subset was drawn from a larger dataset of over 2000 respondents, and the demographics presented in the article have been adjusted to reflect only those who reported having such rituals. In our subset of 487 respondents, 76.8 % ( $n = 374$ ) identified as female, 20.5 % ( $n = 100$ )

identified as male, and 0.8 % ( $n = 4$ ) identified as non-binary or chose not to disclose their gender. The largest age group was 65 years and over (34.5 %,  $n = 168$ ), followed by respondents aged 55–64 (26.1 %,  $n = 127$ ), 45–54 (15.8 %,  $n = 77$ ), 35–44 (10.3 %,  $n = 50$ ), 25–34 (9.9 %,  $n = 48$ ), and 18–24 (3.5 %,  $n = 17$ ). Regarding education level, 31.2 % ( $n = 152$ ) had a high school diploma or equivalent, 27.1 % ( $n = 132$ ) had some college or technical school experience, 18.5 % ( $n = 90$ ) held a bachelor’s degree, 13.1 % ( $n = 64$ ) had a master’s degree, 7.2 % ( $n = 35$ ) had less than a high school diploma, and 2.9 % ( $n = 14$ ) had a doctoral degree.

#### 3.3. Thematic analysis

When combining the results from the survey, the Facebook group and the livechat, we adopted a recursive approach to a thematic analysis [41]: although the Facebook content shaped the preliminary structure of themes, these were adjusted as we integrated findings from the other sources parallel and afterward. For example, watching with pets came to be prominently featured also in the livechat, confirming the relevance of this theme. The closed, anonymous nature of the survey also generated reflections on therapeutic functions of the GMM and multitasking activities, which were also readily shared in the chat. These were present, but more minor on the Facebook group. Meanwhile, livechat reflections added to the importance of watching with others across space and country borders, which helped refine the theme 4.4. Digital Social Interaction – co-viewing. For intercoder reliability, we first coded blind and then compared and adjusted these themes between the two authors. The thematic analysis was also subject to two steps, where the first comprised a rough, blind categorization of findings, and the second comprised a collaborative refinement of these themes to a more analytical level. For example, a rough thematic category collecting all quotations on the timing of viewing the show became 4.3. “Integration of Live and Recorded Content” once we reviewed what this category really contained. From this analysis, we identified six themes that form the framework for the results presented below.

### 4. Forms of multitasking engagement in GMM

#### 4.1. Multiscreen and multidevice interaction

At present, The Great Moose Migration (GMM) can be viewed on a TV screen, while multiple supplementary platforms enhance the viewing experience. For example, the mobile app Duo allows users to participate in livechats, creating real-time conversations about the broadcast. The Facebook group offers a forum-based environment where fans discuss highlights, share personal anecdotes, and engage in broader conversations about moose and the program. Additionally, viewers can access a clickable map through the production’s website, providing an overview of camera placements and enabling users to visualize the physical landscape being filmed. In recent years, a scientific database has also been made available, where viewers can track two dozen research moose in the area via radio collars.

These platforms are interconnected yet cater to different aspects of the viewing experience, forming also different genres of participation with differing levels of investment [42]. The Duo app not only provides access to the broadcast’s livechat but also offers unique features such as Q&A sessions with experts, quizzes, and contests, enhancing interactivity. In contrast, the Facebook group operates at a slower pace, making it easier to share content, engage in more reflective discussions, and revisit posts over time. While the livechat is focused on real-time reactions and interactions during the broadcast, the Facebook group extends beyond the immediate event, fostering a community centred on a shared passion for moose and nature. Together, these platforms create a complementary ecosystem where real-time engagement and enduring community interactions enhance the overall experience. This can be seen in Fig. 1.

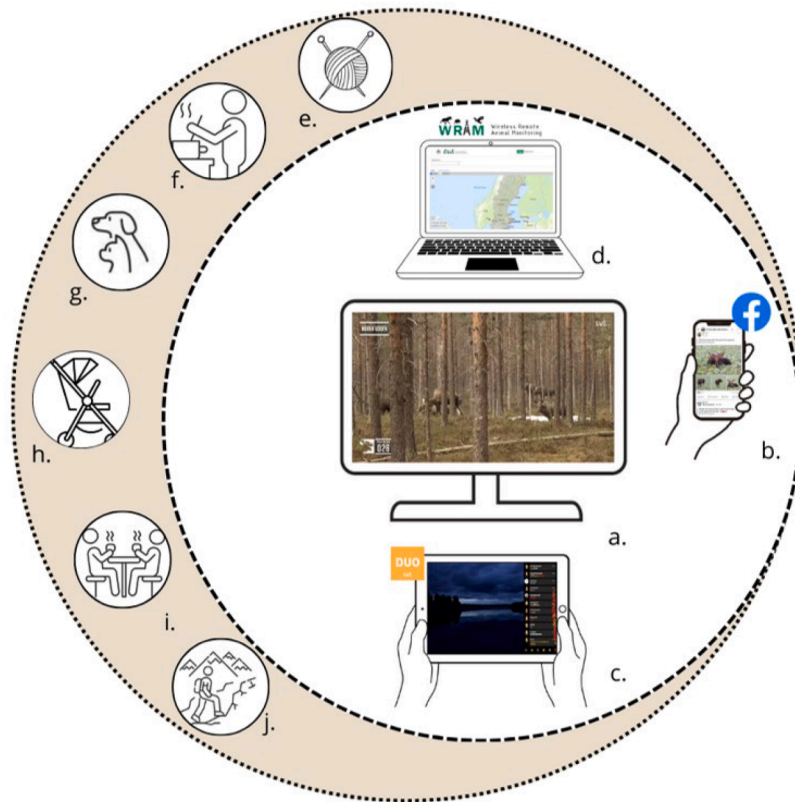


Fig. 1. Diagram of the multitasking viewing experience during **The Great Moose Migration** broadcast. Comprised of the primary nature content (a) displayed on a screen; secondary screens, such as smartphones (b) and tablets (c), enable participatory features like live chats, multiple camera angles, and social media interactions, while computers (d) allow for live tracking of moose migration. E-j. represent physical tasks that can be layered onto the main activity.

We found that the different formats feed into and enhance one another, such as a livechat prompt leading a producer to adjust or ‘pin’ the camera, selecting it ahead of other cameras for the livestream. There are also push notifications for users on their phones that prompt them to turn on their device to view special happenings. A number of users

reported both in the survey, the livechat, and in the Facebook group that they used more than one screen:

"I watch the live broadcast on TV and follow the chat/chats from time to time on the smartphone. Also check highlights on smartphone or tablet in parallel." (survey)



Fig. 2. What the production sees on their screens, choosing to pin active feeds.

"I always have at least two devices running, iPad and iPhone, and usually TV as well." (survey)

There was a strong demand among users for added camera angles and features. In the livechat, calls additional modalities, like an underwater camera, a forest camera, and steerable cameras were frequently made. In a Q&A chat session on May 9th 2024, the producer Stefan Edlund admitted they were now working on making an underwater camera happen in the future. Another user suggested drones would enable better coordination of the moose and quicker switches to the right cameras: "Don't you have any drone cameras? That way you could have a bit more overview of larger areas and see if the moose are coming" (Livechat, 30th April).

Additional screens requested included, for example, "cameras that map the season's moose hunt" (Livechat, 10 May), a return of the 360-camera (present in previous years, but removed because its sound disturbed wildlife), and go-pros on the moose. In a livechat session with the producer on May 9th, the demands of users for more screens prompts a reply from the producer: "In order for you guys to get to choose yourselves from these, we'd have to increase [from 7 channels] to 41 channels! So I'm afraid you might have to be satisfied with those extra 4 you got for the moment." As Fig. 2 shows, the production staff already juggle multiple screens.

This multiscreen engagement reflects the shift from passive media consumption to a more active experience. Viewers are not just watching; they are actively navigating between multiple streams of content and interaction, enhancing their connection with the program and their ability to customize their experience. This potentially leads to a more immersive and impactful encounter with the natural world showcased in GMM.

#### 4.2. Layering tasks of different sensory inputs: audio-visual and sensory engagement

The audio-visual elements of GMM, such as the sounds of wind, water, and birdsong, coupled with the visuals of the moose migration, form a potentially meditative, multisensory experience. It is true that as an audio-visual broadcast, it is limited at the outset: there is no total sensory immersion in nature. However, viewers frequently complement the audio-visual experience by engaging in tactile activities offline, such as knitting, drinking coffee, or simply lying down, which enhances the sensory engagement beyond the digital realm. These are not tasks or senses from the stream itself, but from other realms, which risked them being somewhat unrelated. One task was gustatory, where the live-stream was to be enjoyed partaking in certain drinks, snacks or food.

"Drinking coffee and knitting. It relaxes me." (survey)

"Freshly brewed coffee and something good to go with it for the moments I sit down and actively watch." (survey)

Another modality was to view the livestream while engaging in low-cognitive routine recreational activities. Knitting was an especially popular activity reported in the survey and Facebook group: "I often sit knitting while I watch, and it helps me concentrate on the program." A user in the chat reported combining the gustatory and tactile engagement with the broadcast: "And here I am again. Coffee on the table, my knitting in my lap, and a pair of geese on the TV 🍷🍷🍷" (April 25). The range of activities showcased alongside of watching included relatively high-cognitive concentration tasks like being at work, having 'work on one screen, GMM on the other'.

One user in the livechat said a normal morning for her was to have the livestream of the peregrine falcon in Västernorrland, an urban nest camera, alongside of the GMM on the other side of the screen (April 25). This unique example illustrated ability to engage with two parallel, different streams. As the broadcast progressed, however, it became apparent that many users multi-tasked different media: "I've got the sports [friidrott] on the TV and GMM on my tablet, so I'm not missing anything" (livechat, April 27). This also appeared to occur during the Eurovision Song

Contest on May 9.

GMM often shifted to a more background function at times: "a nice background to have while at work" ❤️ (livechat, April 29). Showing GMM at work was a recurring theme across multiple job domains. A livechat user suggested that the combination of the stream on the TV and its everyday forest ambience boosted her concentration during work tasks. "Is it just me, or do you guys also really get stuff done at the same time as the TV is on during waking hours? The screen becomes like a window to me, where life is a whole lot prettier than in the city. Rain-drops, bird twitter, and splashing moose don't disturb me at all – in fact they boost my concentration" (livechat, May 9). In some surprising examples, users integrated the livestream in their work. "I work at an elder care home for dementia and I usually turn on the moose migration so they can see. It seems to calm them... annyyywaaay I gotta work now" (livechat, April 23). Some of these cases have been publicized in media, such as schoolchildren studying in class while the broadcast is on. Several teachers entered the livechat and discussed how this was working, including how the children became invested.

Other offline modalities that layered onto the livestream included "being sick in bed and needing to have something to watch 😊😊" (livechat, 23 April), cleaning the house, cooking, or even in one case, being out in nature. A user reported in the chat on April 27: "Right now we're out in the real woods and taking care of those trees that are gonna become firewood." Some users appeared to use the broadcast in a background capacity, such as getting ready in the morning for work (livechat, April 22), while others – arguably a more sit-forward type of viewer – reported doing other activities to get ready for the broadcast. "I make sure I can relax completely—clean the house, prepare a fresh cup of coffee, and sit down to enjoy the broadcast." (survey). This modality of attempting to relax completely showed comparatively fewer tasks in the taskscape of GMM: "Lying on the couch, sometimes closing my eyes, enjoying the sound of wind and birds." (survey). Insofar as other activities layered on, they were to be e.g. tactile to not detract attention from the extant modalities offered by the broadcast: "I often sit knitting while I watch, and it helps me concentrate on the program." (survey).

This multimodal sensory engagement appeared closely tied to well-being outcomes, promoting a therapeutic relaxation for many viewers. The program's ability to simulate the tranquillity of the outdoors indoors allows viewers to experience mental restoration, emotional calm, and even physiological relaxation as reported in our survey:

"It gives me peace."

"I relax and find inner calm."

"The sound of the birds and water is like a balm for my soul."

In the livechat, several people admitted to using the livestream as a sleeping aid. For example: "When I use GMM like night sounds I sleep like a log" (28 April).

In this way, the audio-visual and sensory engagement dimension goes beyond entertainment, offering beneficial benefits that enhance well-being and promote a stronger connection to nature.

#### 4.3. Integration of live and recorded content

The integration of live and recorded content adds temporal flexibility to the viewer's engagement. While some viewers prefer the immediacy of the live broadcast, others use highlights or recorded segments to revisit key moments. This blending of real-time and asynchronous content allows viewers to curate their own experience, making it both interactive and adaptable. People in the survey reported to "Check highlights from the previous day", and "Fast forward the TV broadcast when I wake up and also later." This temporal flexibility contributes to the program's accessibility, allowing viewers to engage on their own terms. It also enhances the depth of their engagement, as they can catch up on missed moments or revisit favourite scenes to strengthen their connection to the broadcast.

Going back over posts in the Facebook group also became a way for

viewers to experience the highlights of the previous night or hours they had missed. This enabled them to trace then-live reaction posts and click to the annotated point in the livestream. These annotations are added as soon as any sightings or events occur. When viewing the stream from an annotated point to the present, it is also possible to select speeds: 1x (normal), 1.25x, 1.5x, 1.75x, 2.0x. These speed options appear to be modelled after youtube, and we did not find any explicit statements from users on how they made use of these, if at all.

Finally, the Facebook group also provided longevity to the broadcast by being active all year round. It speeds up greatly in activity during the broadcast, but the rest of the year people post news stories, moose knowledge and pictures, their own experiences, reminisce past highlights, or start to countdown to the next broadcast. "Something I find so nice with this group is that it lives on at least up until next year. People write, send pictures, tell stories all year round. And everyone is super nice ❤️ (Facebook, May 14).

#### 4.4. Digital social interaction – co-viewing

The social dimension of GMM is a crucial aspect of the viewing experience. Viewers engage with one another through online platforms like chatrooms and Facebook groups, often parallel to one another; "I monitor and participate in the chat in parallel, often on another device." (survey). These blended virtual spaces enable discussions in real-time during the broadcast, while social media groups provide a forum for extended interactions beyond the show. "I usually follow the TV and the chat in Duo at the same time, discussing what happens with other viewers, and later, on the Facebook page." (survey)

By 2024, four years since the GMM first aired, these platforms had become highly intertextual: they referred to one another and often featured the same people. In the livechat, someone asked for example: "how many of you are part of the Facebook group?" (26 April). The digital environment fosters a sense of community among viewers, who often exchange knowledge, tips, and reactions to what they see on screen: "I am part of a Facebook group that follows the broadcast "Vi som gillar GMM på SVT!" [we who like the GMM on SVT] and sometimes I follow the broadcasts from SLU and Studio with Stefan." (survey)

The livechat and the Facebook group exhibit a strong sense of belonging in a community, with in-jokes and vocabulary. They call themselves 'a little crazy' (livechat, April 28), likening themselves to Swifties or Beliebers (livechat, May 4). The virtual presence of virtual others in witnessing events on the livestream and attributing them with meaning (or moose with dialogue) could stir up heightened emotions. "For me the biggest value about this show is to listen to the wind and get to take in the absolute stillness of it all, at the same time as you get to experience this active chat where you get a sense of unity and meeting between us all in this country. It's fantastic. (livechat).

The cumulative excitement we encountered in the livechat and Facebook group upon unexpected crossings, large groups of moose swimming, or surprise appearances by large carnivores, was a clear testament to the power of groups. On for example May 7th, several users in the chat reported 'crying and shaking' from the heightened group emotions around witnessing the unexpected volumes of swimming moose, and egging each other on "let's see if we can break the record", which referred to record amount of users in the chat. This digital social interaction forms a bridge between personal viewing and collective experience, creating a community that extends across geographical boundaries.

#### 4.5. Real-life social interaction

The GMM also potentially fosters in-person social interactions. Families and friends gather to watch the show together, sometimes creating rituals or traditions around the viewing experience. These physical social interactions often involve shared meals, conversations

about the show, and even friendly competitions. "We have moose bingo that brings the household together, and we treat the moose walk like an extra holiday." (survey). These activities transform the program into a social event that deepens relationships and provides opportunities for bonding. "I watch highlights every night after work with my partner. He keeps watching when I go to bed and shouts from the living room when something happens." (survey).

The show could also connect geographically distant viewers in a shared virtual space. In many cases, these were simply virtual viewers—netizens with whom there was no prior personal relationship. But as people shared locations or directed others to links, these viewers began to feel more real to one another. In the chat, there were frequent international greetings. "Ciao from Italy! I love your slow cam!!", "Hello from Turkey", "Hello from Colorado", "Hello! My name is Alice! I'm from England.", and Swedish expats elsewhere "Hi from Ireland", as well as Kenya and Australia.

Since the German television picked up the moose broadcast in 2024, people were also curious about how it was received and experienced there. "How does the RTL German broadcast differ?" (April 24 & May 9). Inaugurating new international viewers in the broadcast and into the extended viewer community appeared an interest among several. "I had to show the Norwegians at work today our Slow-TV (29 April). In this way, the broadcast fostered connections across the world, however ephemeral. In a more local example, two chat users discovered on April 29 that they were from the city, after one had mentioned a walking route with two deer sighted. In another example, two users discovered they had been to the same concert—ZZ top—in the 1980s (May 2).

In cases of viewers with prior relationships with other viewers, tuning into the moose migration served as a connector "My mum lives in Germany, and we both watch the moose migration. Every time the moose swims, we call each other and check on it 'together.' It makes it like a little family experience, even if we're 2000km apart." (survey). This real-life social dimension highlights how GMM becomes a focal point for personal relationships, facilitating shared experiences that extend beyond the screen. These gatherings turn the show into a social event, where viewers bond through their mutual interest in nature and wildlife.

#### 4.6. Multispecies interaction – viewing with pets

Pets play a unique role in the multimodal engagement with the GMM. These multispecies interactions add a tactile and emotional dimension to the experience, as viewers share the show with their pets, whose reactions to the nature sounds and visuals create a more interactive and embodied viewing experience—at least for the human viewers. Pets become active participants in the viewing process, adding a layer of companionship and sensory engagement that deepens the viewer's connection to the content.

"My cat finds the program exciting, so it's nice to see his joy as well." (survey)

"I watch with my dog, and we share the experience as if we're both there in nature."(survey)

In the Facebook group, we coded multispecies viewing and found the following distribution as per threads made (not counting replies in threads) 20 dog threads, 34 cat threads, 1 parrot, and 4 more than two nonhuman species audiences (like cats and a dog). A few pets watching instances made the news, and were often linked to in the group. In Fig. 3: Pets Watching, three species can be observed watching.

In addition to this, the livechat held two special sessions for posting pictures of pets viewing on May 5th and May 11th which had been sent to the administrator beforehand. The growing popularity of watching with pets—and above all of posting to others that one watched with pets—prompted a livechat users to suggest "Someone should make a butterfly-TV for cats" (April 23).

Multispecies interaction extends the multimodal experience beyond the digital and into the physical world, making the show not just an act

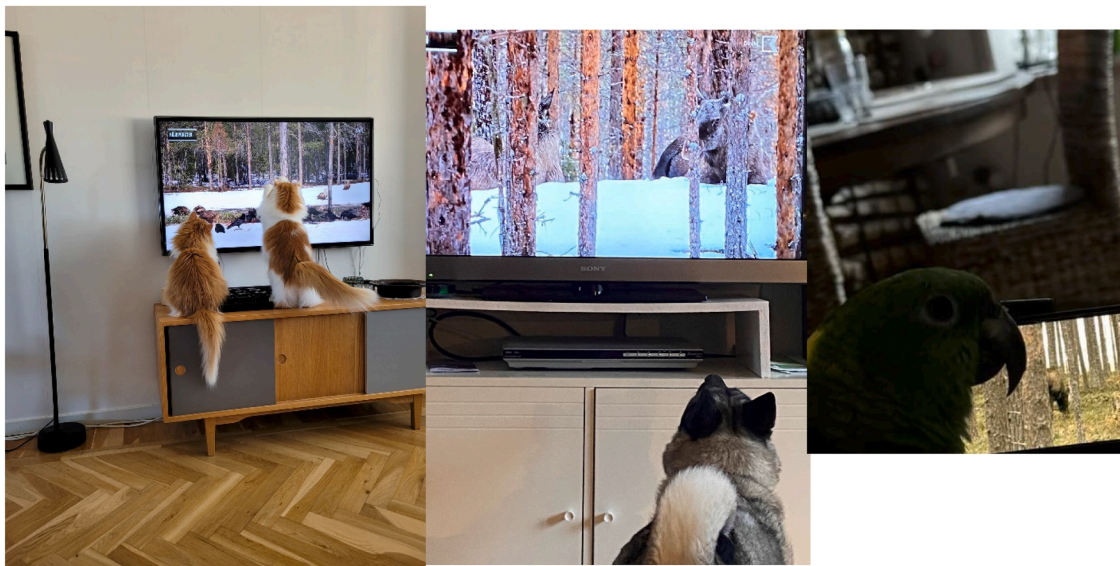


Fig. 3. Pets watching (used with permission from Facebook).

of watching but a shared sensory and emotional journey. Pets enhance the viewer's immersion by reacting to the program in real-time, creating a symbiotic relationship between the digital and real-world experiences.

## 5. Discussion

### 5.1. The hybrid nature of GMM: bridging digital and physical worlds

The Great Moose Migration (GMM) offers a unique case study in the merging of digital and real-life experiences. Viewers are not just passively consuming content; they are actively engaging with the broadcast through digital platforms while grounding these experiences in their physical environments through tactile or gustatory tasks. This simultaneous interaction with digital and real-life elements [43] blurs the boundaries between the virtual and the physical, creating a hybrid experience or multi-taskscape. This merging of worlds raises important questions about the authenticity of the nature experience provided by the show. It is evident that digital engagement with nature 'insulates' the user, in Ingold's terminology, from weatherworlds and multiple senses of experience as these appear in the natural environment [44].

Indeed, nature experiences are traditionally valued for their unmediated, immersive qualities—being physically present in nature, absorbing its sights, sounds, and smells without filters [45]. The GMM falls short of this by offering an experience that is inherently mediated through technology. However, as if recognizing this single modality, many users of the GMM look to other tasks to supply missing senses, adding tactile and social tasks. These necessarily come from outside of the livestream and is reliant on users themselves to enact. Nevertheless, GMM hence exemplifies the creation of a hybrid space where digital and real-life worlds coexist and interact. Activities in the taskscape are not all 'of' nature, but contribute to a more rounded multisensory experience *about* nature.

### 5.2. The role of multitasking in the GMM experience

Multitasking is often viewed through a binary lens—either as an enhancement to the experience or as a distraction that detracts from it. The design of the GMM actively encourages multitasking by incorporating features like live chats, multiple camera angles, and social media integration. For many viewers, the ability to multitask—whether it is participating in live chats, switching between camera angles, or engaging with social media—appears to enhance the experience by

adding layers of social interaction and customization. This suggests that, for some, the multitasking element is not a distraction but a valued part of the experience that deepens their engagement with the content. This may be understood in terms of multitasking being an inbuilt affordance of the program, where all these tasks correspond to the same goal: to deepen engagement with the GMM. By contrast, a task like vacuuming in the background of the show is arguably not an inbuilt affordance to facilitate the same goal. On a perspective of engagement, such a task ostensibly inhibits the goal.

While working with goals as a way of determining the additive or subtractive value of a task to the desired goal of the taskset is tempting [46], it risks treating goals as static and pre-defined. Another potential simplification involving seeing multitasking in a binary evaluative lens is through considering its cognitive mechanisms as either task-switching and parallel processing. A potentially more helpful and accurate representation of multitasking for a show like the GMM, is to conceive of it as a shifting multi-taskscape. Users engage in various tasks—knitting, checking their phone, chatting, watching the livestream, posting on Facebook—but the presence of events and micro-climaxes on the GMM feed can temporarily shake up and *reorient the user in their taskscape*. When a moose swims over the river or a bear appears by the camera, knitting and phone checking shift to the background in terms of importance. In the case of multiscreening, this is often also literal: one can maximize and minimize the windows of the GMM [17]. Instead, the user engages more cognitively with the livestream and the parallel livechat, whose users narrate and celebrate the happenings. Hence, we see the multi-taskscape of this sort of show as highly flexible in its design and use, with tasks floating in and out of priority as 'main' tasks and others are ancillary ones that can be quickly recalled from the background.

Recent research on multitasking may be more amenable to a multi-taskscape perspective than a taskset with a predefined goal. Rather than discuss parallel processing or task switching, for example, Wang et al. [35] provides an account of this as a task hierarchy or task relevance, involving strategic prioritizing at different times. Further developing on this, Segijn, Voorveld, Vandeberg and Smit [47] shows "watch [ing] something without paying attention to it" (p. 16), which involves "a more interleaved strategy where one task is temporarily suspended to allocate visual attention to another task". ([33] 780). Task interleaving or 'threading' [48] raises questions about which is the primary task or goal to begin with, suggesting that this may not always be given for the viewer. Others have attempted to resolve this in terms of the

co-existence of multiple goals, some of which are activated or put aside [49]. Szumowska and Kruglanski [49] also suggest that goals may differ from those ‘in one’s head’ (intended) to what becomes the actual goals. The concept of multi-taskscape, rather than, for example taskset [46], is thus well suited to address this dissonance and flexibility in goals (see also [48] for flexibility). It recognises a shifting constellation of tasks over time, perhaps with a relaxed need for a clear goal from the outset.

### 5.3. Multitasking and nature engagement: cognitive costs and benefits

One well-documented effect of multitasking is the tendency for individuals to overestimate their productivity [50]. This phenomenon, often highlighted in research, suggests that multitaskers frequently believe they are accomplishing more than they actually are, due to the cognitive illusion of efficiency created by rapidly switching between tasks [51]. In the context of GMM, a similar overestimation might occur regarding viewer satisfaction. For instance, some viewers report that engaging in multiple activities—such as watching the livestream while participating in live chats or checking social media—enhances their experience, making them feel more connected and engaged. However, this perceived enhancement may not always align with the actual *quality* of engagement. The frequent switching of attention between different tasks and the broadcast may reduce overall focus, leading to a less immersive experience than viewers perceive. This may particularly be so, when tasks are unrelated or, in the words of Szumowska and Kruglanski [49], are aimed at realizing different goals: watching the livestream and vacuuming.

Despite critical perspectives on the cognitive costs of multitasking, there is also a compelling argument that incorporating nature content into one’s bricolage of multitasking, indeed a multi-taskscape, could offer unique benefits [52]. Nature is well-known for its calming and restorative effects, reducing stress and promoting relaxation. In the context of GMM, the presence of nature content might mitigate some of the negative effects typically associated with multitasking. The soothing visuals and sounds of the moose migration could provide a form of mental respite, offering moments of stillness and quiet amid the cognitive demands of multitasking. Hence, multitasking with nature content might be a special case where the usual cognitive burdens are lessened, allowing viewers to derive more satisfaction from their engagement. At least, this may be so with slow-TV, and less so with high-speed nature documentaries.

### 5.4. Social and relational dimensions of GMM

We posit that given the importance of the social aspects of the GMM, including co-viewing with virtual others, with physically present others, with celebrity guests, and with one’s pets, it may also be fruitful to consider how digitally mediated nature engagement fosters relational values. It is based on the idea that being in nature enables positive relations *with other people*. These are values *about* nature rather than *of* nature [53]. For the GMM, they may be understood as maximising digitally mediated relational values about nature. The extent to which the GMM fosters these relational, social values between viewers may become clearer with time. Nevertheless, the affordances for doing so are now in place. Viewers in Sweden can share the experience with those in other countries, creating a virtual space where geographical boundaries are blurred, and everyone can engage with the same content in real-time. This is particularly significant in today’s world, where digital platforms often provide the only means for such large-scale, simultaneous participation. Additionally, the availability of recorded highlights and on-demand content means that those who cannot watch the livestream at the same time can still participate, catching up on key moments and contributing to discussions at their own pace.

The flexibility of the platform design also make the user experience flexible across demographics and needs: everyone can compose a unique taskscape. Importantly, the GMM also gathers Swedes together around a

shared cultural symbol—the moose, which represents Swedish nature—making it a unifying experience that reinforces a collective national identity. Pink et al. [39] write that platforms and digital media can in this way be used to generate a sense of locality to reconnect to or represent, often trading on nostalgia. By catering to both urban and rural sensibilities, the program creates a common ground where viewers from diverse backgrounds can connect and share their appreciation for the natural world, similar to how Norwegians bonded over cultural heritage in the slow-tv of *Hurtigruten*, which formed part of the inspiration for the early conceptualization of the GMM [54].

### 5.5. Implications for vicarious nature experiences

In the above, we have discussed the GMM in terms of a physical-digital multi-taskscape that may be increasingly representative of how modern viewers can come to interact with nature content [43,36]. In terms of providing assessments on the desirability of such engagement over nature, we contend that evaluations greatly depend on the definition of success [35]: what the user wants out of the different tasks and from their nature engagement. Evaluating multitasking over a show like the GMM with criterion such as task completion, actual physical nature engagement at a later stage, pro-environmental outcomes, or donations to conservation, take a consequentialist assessment. That is, they evaluate the phenomenon in terms of it constituting a means to an end. In the case for nature engagement, vicarious or mediated nature experiences are seen as successful insofar as they act as stimuli for the real thing later [55]. It remains to be seen how, if at all, the GMM is successful in getting people out into nature.

However, such an evaluation may miss part of the point, by failing to consider the experience as valuable on its own—intrinsically rather than instrumentally. On this evaluation, multitasking or logging hours in front of a nature livestream are not about effectively promoting other ends, but about creating a desirable experience in the moment. If we subscribe to this perspective as also being important, success for a show like GMM would centre more on phenomenological assessments of immersion for users. Hence, multitasking would be evaluated on the basis of how well it added to or distracted from this immersion. Additionally, traditional measurements of success of multitasking (including task completion, rate of completion, quality of tasks performed, etc) may miss that allowing for problematic multitasking—in terms of exhibiting distraction—may be preferable to no multitasking. Pool et al. [56] for example found that although multitasking students, watching TV, took longer to complete homework, they found it more pleasurable to do the homework with television on, leading to more homework completion. In a similar way, watching a show like the GMM while cleaning or working in the background, may make it more pleasurable for people to complete onerous tasks. Moreover, if use of apps and devices is one of the few ways in which for example urban residents ‘experience’ nature, it may be preferable to having no engagement with nature at all. However, while these assessments demonstrate the potential of vicarious nature experiences to serve diverse goals, they also underscore the challenges in striking a balance between creating immediate value and fostering long-term connection to the natural world.

### 5.6. Limitations of multitasking in mediated nature interactions

While the GMM exemplifies the potential of digital media to enhance engagement with nature, it is equally important to consider the unintended consequences of such highly mediated experiences. First, the multitasking encouraged by the program, though participatory, risks fragmenting viewers’ attention, as multitasking has been shown to deplete attentional resources and impair cognitive control [57]. By layering multiple tasks and platforms, viewers may inadvertently dilute the immersive quality of the nature experience, relegating it to the status of a background activity or another element within a multi-taskscape [58]. This raises critical questions about the depth and meaningfulness



of the connection with nature being fostered.

Moreover, the GMM's reliance on digital affordances highlights a broader concern in nature engagement today: the normalization of virtual interactions as sufficient substitutes for real-world experiences. This trend contributes to what Soga and Gaston [16] term the "extinction of experience," wherein mediated interactions increasingly displace unmediated ones. While viewers may feel connected to nature through the program, it remains unclear whether this connection leads to sustained ecological empathy or pro-environmental behaviours. The digital nature experience risks becoming a curated encounter, one that prioritizes interactivity and social connection over solitude and introspection, potentially sidelining quieter audiences [59].

Additionally, participatory features of the GMM tend to favour the preferences of more active, vocal users. These participants, often drawn to multitasking and social affordances, significantly influence the program's design by engaging in feedback loops through live chats and social media. However, this prominence of interactive users may come at the expense of solitary viewers, whose quieter presence is less visible. These viewers, who value the GMM for its meditative and reflective qualities, might find the increasing emphasis on social features and celebrity commentary detracts from the simplicity they seek. While the solitary viewer is not required to participate in these affordances, avoiding them may become increasingly difficult as they are integrated into the collective multi-taskscape. Future iterations of programs like the GMM could consider offering customizable user interfaces, allowing viewers to toggle interactive features on or off. This would empower solitary viewers to preserve the meditative and reflective aspects of their experience while still catering to those seeking participatory engagement.

This dynamic raises broader questions about inclusivity and balance in designing nature engagement experiences. Programs like the GMM must navigate the challenge of accommodating heterogeneous user preferences, from those seeking social interaction to those valuing solitary connection. Recognizing and addressing these challenges is critical for ensuring that programs like the GMM fulfil their potential to engage diverse audiences while preserving the authenticity and inclusivity that make nature experiences meaningful. Future efforts should focus on balancing participatory features with opportunities for solitude and introspection, fostering a more inclusive and layered multi-taskscape.

## 6. Conclusion: toward a digital taskscape

The Great Moose Migration may be thought of as a digital-physical multi-taskscape, curated by its users. Tim Ingold wrote of taskscapes as more active versions of landscapes [20]. Taskscapes go beyond "visual scenery" or "material backdrop to social life", and are entangled and shaped by the dwelling activities of its inhabitants ([60] 588). Although there are numerous solitary viewers who do not make use of apps, many users very much actively dwell in the social environment of the GMM. They are inventing new channels and tasks that in turn come to shape the broadcast. As we found, these users crave more cameras and features, and these have often become assimilated incrementally each year by the production. The development of this taskscape appears a mutually reinforcing process, as it adds more affordances for users that in turn can engage in a wider variety of tasks. These tasks are all aimed at the same goal: to deepen engagement with the show.

In the digital multi-tasksapes of our study, material realities and physical acts become embedded with digital tasks. There occurs a moving across online and offline worlds [61]. For example, knitting while checking one's email, while browsing a social media. Thus, tasks in the digital and the physical can layer onto one another, at times complementing each other, but at times also detracting focus or inviting cognitive bottlenecks. Some collective activities entail a shared digital multi-taskscape where they perform tasks that are both individual and collective.

Tim Ingold never wrote about implications of the digital multi-taskscape on nature engagement, or indeed the Digital Anthropocene. But he did write about the impact of modern technology on how we experience the landscape and hence enact our tasks in it. His primary concerns were how modern technologies—involving speeding up ways of experiencing the landscape, truncating some parts of the experiences of it, and distancing people from their direct and haptic engagement with the landscape—could disembed users from the natural environment. These concerns are recognizable in our context. However, as we have shown, technologies can also transform taskscapes in positive ways. In the Great Moose Migration, there may be arguments that the taskscape as a whole—by being so interactive—can re-embed users with nature. If this is a tall order, we have shown that the programme at least appears to maximise relational values *about* nature, if not *of* nature [62].

While digital multi-tasksapes over nature lack some of the sensory and place-based elements of embodied experiences, we conclude that technology-mediated or digital experiences are not necessarily less transformative or informative than those taking place in the 'real world' [63,64]. If they possess the affordances needed to make experiences multisensory in some capacity – such as by inviting multiple tasks alongside it to deepen immersion – they may both constitute *and* stimulate a meaningful nature experience [65]. Moreover, 'rather than dismissing these [digital] forms as inauthentic... we have to examine the consequences such a shift could have on people's lives in the long run' [55].

This shift is part of the broader transformation that nature experiences are undergoing in the modern world [66]. While traditional nature engagement often involved immersive, singular focus—such as hiking in the woods or birdwatching—digital nature experiences now challenge this modality. Multitasking and specifically multi-screening may be part of an ongoing transformation in how people relate to nature, where the experience is not diminished but rather redefined by the integration of digital and social elements. Going forward, future research could explore whether alternative or modified frameworks on multitasking and nature engagement might better account for the fragmented attention and layered experiences that characterize digital media consumption today.

## CRedit authorship contribution statement

**Erica von Essen:** Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Minh-Xuan A. Truong:** Writing – review & editing, Funding acquisition, Data curation.

## Declaration of competing interest

The authors declare no conflict of interest pertaining to this manuscript.

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## Data availability

Data will be made available on request.

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