THESIS

CHECK THE COMMENTS SECTION:
EXPLORING DRIVERS OF ONLINE COMMENTARY
ON COLORADO'S WOLF REINTRODUCTION

Submitted by

Trent Pearce

Department of Fish, Wildlife, and Conservation Biology

In partial fulfillment of the requirements

For the Degree of Master of Science

Colorado State University

Fort Collins, Colorado

Summer 2026

Master's Committee:
Advisor: Sara Bombaci

Georgia Titcomb
Katie Abrams

Copyright by Trent A. Pearce 2026

All Rights Reserved

ABSTRACT

CHECK THE COMMENTS SECTION: EXPLORING DRIVERS OF ONLINE COMMENTARY ON COLORADO'S WOLF REINTRODUCTION

The success of carnivore reintroductions depends on public tolerance of species and public acceptance of management decisions. Agenda-setting theory holds that mass media coverage shapes both what issues are salient and how audiences understand and discuss those issues. Previous studies have demonstrated that media coverage influences how publics perceive carnivores and moderates tolerance toward those carnivores; however, the convergence of top-down media agendas and decentralized online discourse during an active reintroduction remains understudied. We examined the sentiment and thematic content of online discourse surrounding Colorado's gray wolf reintroduction (Proposition 114) and tested whether prior mass media and stakeholder media coverage predicted the content of social media comments. Using mass media articles, YouTube and Reddit posts, and the comments on posts from 2020 through 2025, we quantified sentiment through multi-lexicon classification and themes through transformer-based topic modeling coupled with qualitative thematic coding. Governance and Management dominated mass media coverage, while Rural Livelihoods occupied the largest share of comments. Comment sentiment tracked originating posts more closely than mass media coverage and trended more negative over time. Above average mass media coverage of Rural Livelihoods predicted the same theme in subsequent comments. These results are consistent with second-level agenda-setting and suggest that management agencies can monitor online discourse and

media coverage of ongoing initiatives, and frame communications appropriately to support management objectives.

TABLE OF CONTENTS

Introduction

Carnivore conservation success is largely dependent on public tolerance of the species and public acceptance of the management policies surrounding the species (Ripple et al., 2014; Waters & Mars, 2021). Public perceptions compete with and often surpass tangible biological outcomes in determining the perceived success of management initiatives, with lasting success often contingent on the extent of public support for management efforts (Manfredo, 2008; Waters & Mars, 2021). Support and opposition for carnivore management initiatives in the United States frequently align with socio-political demographics and underlying beliefs and attitudes about the relationship between humans and wildlife (Manfredo et al., 2020; Nie, 2001). Carnivore management is therefore deeply intertwined with stakeholder management, and wildlife managers are challenged with rapidly and effectively assessing stakeholders' values, perceptions, and support for management decisions (Schroeder et al., 2021). If management agencies implement initiatives without broad-based public support, goals may be undermined by legal injunctions, legislative hurdles, or individual non-compliance (e.g., illegal killings) that hamper management efforts (Nie, 2001).

The Colorado wolf reintroduction initiative, Proposition 114, exemplifies these management challenges and highlights long-standing divisions in public opinion on predator management in the American West (Gonzalez et al., 2024). Passed on Nov. 3, 2020, this initiative illustrates the polarization between stakeholder groups with diverging values, identities, and geographical locales—younger residents, urban residents, and residents who identified as pet owners or wildlife advocates showed higher levels of support than older residents, rural residents, and residents who identified as ranchers or hunters (Niemiec et al., 2022). Due to the divisive social context of the initiative, and complicated by perceived threats to

rural livelihoods, considerable resources have been dedicated to both biological and social conflict mitigation (V. Yovovich, personal communication, September 5, 2024).

Because direct experience with carnivores in the wild is limited for many people, media portrayals may exert a strong influence on individuals seeking to understand and quantify risk (Jacobson et al., 2012). Media portrayals of predators have been shown to exhibit systematic biases in their framing toward graphic content, negative content, and conflict-centered narratives (Bombieri et al., 2018; Jacobson et al., 2012; Niemiec et al., 2020). This negative framing can increase public risk perception of predatory species and decrease social tolerance, even in the absence of personal experience. Macdonald et al. (2023) found that public perceptions of shark bite risks closely followed negative media coverage of shark bite attacks, increasing audiences' perception of the likelihood of such events. Gore and Knuth (2009) found that exposure to media coverage of a neighborhood bear watch campaign emphasizing fear was associated with decreased acceptance of bear-related risks.

The capacity of media framing to actively shape public perception can be fundamentally understood through the lens of agenda-setting theory. Agenda-setting theory established that mass media organizations, particularly those operating on national and international scales, can shape public agendas by determining the salient issues that emerge in public discourse, informing audiences *what* to think about (McCombs & Shaw, 1972). Built upon this framework, second-level agenda-setting theory suggests this influence is extended to the salience of attributes about an issue, which guides audiences in *how* to think about issues by setting substantive attributes, e.g., the characteristics or properties detailing an issue, and affective attributes, e.g., the tone or valence through which an issue is communicated (McCombs, 2005; McCombs et al., 2000).

While this traditional framework assumes a centralized, top-down flow of information from media organizations to a passive public, the digital revolution has reconfigured these dynamics. The advent and widespread adoption of blogging and social media as both platforms of inter-public discourse and venues through which media stories are shared has facilitated a shift in the classical ideas of information transmission from mass media to audiences. With the rise of online communication platforms, audiences can now affect agenda signals and set attribute salience through blogs, emergent (online-only) media, and social media posts (Hunter et al., 2013; Meraz, 2011). These "stakeholder media entities" have the power to sidestep traditional mass media gatekeepers and directly influence the strategic agendas of both mass media and the general public (Hunter et al., 2013). Operating under fundamentally different guidelines than mass media, stakeholder media entities may leverage influencers, trusted individuals who shape public thought through online presence, to build strong advocacy agendas, setting attribute salience in alignment with their own values and ideologies (Hunter et al., 2013; Meraz, 2011).

This shift from traditional information transmission to stakeholder-driven advocacy and related attribute salience is especially relevant in public debates on carnivore management. Carnivore coverage by mass media can vary widely across rural-urban gradients, media types, and media organizational size, varying the salient attributes that audiences receive (Braun et al., 2025; Chandelier et al., 2018; Trainotti et al., 2024). Stakeholder media may further exacerbate this gradient, setting salience using sensationalized imagery and persuasive storytelling (Crown & Doubleday, 2017). Additionally, the rise of social media has transformed some public discourses on wildlife management into "echo chambers," in which issue attributes set by stakeholder media interact with audience emotions to both catalyze emotions and propagate misinformation (DeConcini & Rice, 2021). However, a critical

gap remains in our understanding of how traditional top-down agenda-setting forces and decentralized, bottom-up stakeholder dynamics converge to shape public discourse during active wildlife reintroduction efforts.

To bridge this gap, this study examined how three distinct agendas interact within the online Colorado wolf reintroduction discourse: 1) the mass media agenda, represented as news media coverage and social media posts by news organizations, 2) stakeholder media agendas, represented as social media posts by stakeholder media entities and individuals, and 3) the public agenda, represented as public discourse via social media comments. We quantified substantive attributes using unsupervised topic modeling and qualitative thematic analysis to represent salient themes, and affective attributes using sentiment analysis to represent the emotional valence of discourse. We asked the following research questions:

RQ_1: What sentiment and theme patterns characterize Colorado wolf reintroduction online discourse and mass media coverage?

RQ_2: To what extent do prior mass media coverage and stakeholder media coverage predict the sentiment and thematic content of social media comments on Colorado wolf reintroduction?

Methods

Data Collection and Cleaning

Our dataset consisted of written mass media articles, YouTube videos and comments, and Reddit posts and comments related to the Colorado wolf reintroduction. To collect mass media articles, we used an automated script in R (R Core Team, 2021) to query Google News RSS using the search string ["Colorado" AND ("wolf" OR "wolves") AND ("reintroduction" OR "release")] for September 2020 through October 2025. We collected publication date, title, source, and URL for each article, then extracted article body text using *Selenium* library in Python (Python Software Foundation, n.d.). To collect YouTube videos and comments, we queried the YouTube Data API v3 in three-month windows using the search string ["colorado" wolf|wolves reintroduction|release] from November 2020 through June 2025, then filtered by videos whose titles contained both "colorado" and either "wolf" or "wolves" and that had received at least one comment. We then retrieved transcripts using the *youtube-transcript-api* library (Depoix, 2018) in Python. For each retained video, we collected first order comments, recording the video identifier, comment text, replies, author display name, and publication timestamp. To collect Reddit posts and comments, we used the *PRAW* library in Python to search nineteen subreddits selected based on relevance to Colorado, conservation, hunting, ranching, and rewilding using four search string variants combining "Colorado" with "wolf" or "wolves" and "reintroduction" or "release." We retained posts published between November 2020 and June 2025 that had received at least one comment. For each retained post we retrieved author, score, upvote ratio, comment count, content flags, and the full comment thread. We then filtered by

first order comments and their replies. All data collection was approved by the Colorado State University Institutional Review Board, protocol #6937.

We aggregated comments from Reddit and YouTube into a single corpus and anonymized the dataset by replacing each username with a unique hash. We cleaned comments by stripping @mentions, hashtags, and URLs, then applied domain-specific spelling corrections (e.g., "em"/"um" = "them", "sss" = "shoot shovel shut up"). For sentiment analysis, we converted emoji to text via a custom Unicode 15 lookup table, and for topic modeling we removed emoji entirely. We detected non-English comments using the *Compact Language Detector 2* library (Ooms, 2025) in R, manually validated flagged cases, and removed 11 confirmed non-English entries. We then deduplicated comments, removing 36 exact duplicate comments from the same user on the same post on the same day. We then bound the content of each social media post (originating Reddit post or YouTube video transcript) to each comment.

Sentiment Analysis

To quantify sentiment in the corpora, we utilized a multi-lexicon model-averaged sentiment analysis via the *WoCSentiment* package in R (Hill et al., 2025). This method calculates sentiment scores from thirteen publicly available sentiment lexicons (*AFINN, Bing, Inquirer, Loughran, NRC, SenticNet, SentiWordNet, Slang, Socal, Syuzhet, TextBlob, VADER,* and *WKWSCI*). We set parameters to use all thirteen lexicons and use relative score calculation, producing a sentiment score from each lexicon by scoring the individual words of the transcript and calculating the difference in positive and negative words divided by the total words in each transcript, while accounting for negations and multi-word expressions. We analyzed social media

comments, social media posts, media articles, and media article titles individually, and appended continuous sentiment scores to each of these categories.

Topic Modeling

To identify topics in the dataset, we utilized *BERTopic* (Grootendorst, 2022), a sentence transformer-based automated topic model, paired with *all-mpnet-base-v2* transformer model for sentence encoding. To begin, we applied *NLTK*'s sentence tokenizer in Python to segment all text into a sentence-level dataset, aggregated by date and data type (comments, mass media articles, and posts). We then encoded each sentence with all-mpnet-base-v2 and stored embeddings for consistency across downstream model runs.

To select optimal hyperparameters, we used a two-stage tuning loop with the *Optuna* package in Python (Akiba et al., 2019). In stage one, we tuned UMAP and HDBSCAN parameters using a multi-objective Pareto search designed to maximize relative validity score (DBCV) and number of clusters, preventing topic collapse in the downstream model. We iterated over n_components (10–20), n_neighbors (15–50), min_dist (0.0–0.3), min_cluster_size (10–30), min_samples (1–10), cluster_selection_epsilon (0.0–0.5), and cluster selection method (eom or leaf). In stage two, we added BERTopic parameters and tuned to optimize coherence, measured with *gensim'*s CoherenceModel, and topic diversity, measured as the proportion of unique words across the top words per topic. Stage 2 tuning used narrowed search parameters identified in stage 1: n_components (13-16), n_neighbors (25-40), min_dist (0.03-0.04), min_cluster_size (25-30), min_samples (15-25), and cluster_selection_epsilon (0.15-0.20). We also iterated over the following BERTopic and vectorized parameters in this stage: min_topic_size (7-10),

ngram_max (1-3), and bm25_weighting (true/false). We held cluster_selection_method at "leaf," top_n_words at 5, and reduce_frequent_words at "true."

We then fit the final tuned UMAP, HDBSCAN, and *BERTopic* model with the stage 2 best parameters on the mass media and social media comment sentence corpora, as these datasets were less noisy and contained more relevant topical context than the social media post sentences. To reduce outlier topic assignments, we used *BERTopic's* embedding-based outlier reduction with 0.3 cosine-similarity threshold, followed by manual refinement in which thematically related topics were merged and low-quality or off-topic clusters were pruned to outliers. The full tuned pipeline was then re-run on all social media post sentences to search for additional topics not identified in the media and comment corpora. We then merged the two tuned *BERTopic* models with a minimum cosine similarity of 0.7, refit topics on the combined corpus, and exported document-level topic assignments for all sentences. Each social media comment received a single topic assignment based on the dominant topic identified by the model. Social media posts and mass media articles retained all topics with predicted probability of $P > 0.5$, retained as topic counts.

Thematic Coding

We developed thematic categories using inductive, deductive, and abductive methods. First, topic model clusters were reviewed for interpretive coherence and labels were created for each cluster using inductive coding. We then inductively collapsed these 89 labeled topics into 25 sub-themes. Next, we constructed a deductive codebook from seven peer-reviewed studies examining stakeholder discourse in wolf reintroduction and predator management following Braun and Clarke (2006), extracted thematic codes, and combined them into seven overarching

meta-themes representative of previously published wolf discourse analysis (Appendix A). Finally, we applied this codebook to the *BERTopic* model outputs and evaluated topics against themes by examining representative documents from each topic cluster, following the abductive logic described by Timmermans and Tavory (2012). All coding was performed by two independent coders, and Cohen's Kappa scores for each level of coding (topic labels, sub-themes, and meta-themes) were recorded, with scores of $k > 0.75$ considered satisfactory. We compared each thematic code against representative reference sentences drawn from the three corpora to verify that the assigned codes corresponded to the substantive content of the documents they labeled (Appendix B).

Exploratory Data Analyses

To explore sentiment across the three corpora, we calculated the mean, median, and standard deviation of sentiment scores for mass media articles, social media posts, and social media comments, and assessed the normality of distributions through visual inspection of histograms and quantile-quantile plots. To explore potential sentiment biases in media coverage, we calculated media article title sentiment for each mass media publisher with greater than five published articles. To explore thematic distributions across the three corpora, we mapped each sentence to its modeled topic label, sub-theme, and theme, excluding sentences assigned as *BERTopic* noise. We then summarized the proportion of sentences within each theme, both overall and separately by corpus, to describe the thematic composition of the dataset.

Modeling Sentiment

We calculated daily theme counts and mean article title sentiment scores for the mass media corpus using a 7-day rolling window, selected based on previous work by Gilardi et al. (2022), who used a 7-day lag structure to capture a full news cycle and Roberts, Wanta, and Dzwo (2002), who found that online public discourse responded to media coverage within 1 to 7 days. Comments on dates with no media coverage within the prior 7-day window were excluded from final models. Parent post topic counts were joined to each comment via post identifier and included as document-level covariates. The final sample contained 15,706 comments with complete predictor data.

We modeled comment-level sentiment as a function of lagged media sentiment, originating post sentiment, comment date, channel type, and social media platform by fitting generalized additive models using the *mgcv* package (Wood, 2011) in R. To accommodate heavy-tailed residuals, we used a scaled-*t* response distribution in all models and estimated smoothing parameters by restricted maximum likelihood. Due to collinearity among predictors in exploratory models, we regressed media article title sentiment against total media coverage per seven-day window and used the residuals of this regression as our media predictor variable. Smooth terms were explored for all continuous variables. Variables whose estimated degrees of freedom approach one were fit as parametric linear terms. We set the basis dimension for each supported smooth a priori at $k = 8$ and then reduced to the smallest value supported by residual diagnostics, favoring parsimony across the candidate model set. Smooths were retained at $k = 6$ for lagged mass media title sentiment and social media post sentiment. We then compared all subsets of our global model by AIC using the dredge function in *MuMIn* (Barton, 2025), and estimated coefficient effects via model averaging across all models with delta AIC < 4.

Modeling Themes

We modeled comment-level thematic assignments as a function of lagged media theme counts, originating post dominant theme, comment date, and channel type by fitting multinomial logistic models using the *nnet* package (Venables & Ripley, 2003) in R. Due to collinearity among media theme counts in exploratory models, we regressed theme counts against total media coverage per seven-day window and used the residuals of this regression as our media predictor variable. Comment date was explored as a linear, natural spline, and interaction term by media coverage, and ultimately retained as a linear term due to modest gains in AIC versus a substantial cost in model parameters. We then compared all subsets of our global model by AIC using the dredge function and estimated coefficient effects via model averaging across all models with delta AIC < 4 while holding date and post dominant theme as fixed terms. To reinforce modeling results and determine whether media coverage and comment content were temporally related, we constructed a weekly time series of comment and media sentences coded to "Rural Livelihoods" and conducted bidirectional Granger causality tests at a lag time of seven days (Granger, 1969).

Results

Exploratory Data Analysis

Sentiment distributions in all three corpora departed from normality. Media and post sentiment showed slight negative skew (−0.28 and −0.27) with moderate leptokurtosis. Comment sentiment was positively skewed (0.90) with strong leptokurtosis (Fig. 1). Across all corpora, the

histograms and quantile-quantile plots indicated heavy-tailed distributions centered near neutral. Media article title sentiment averaged slightly negative (mean: −0.0097, SD: 0.0609, median: −0.0016). Social media posts averaged slightly positive (mean: 0.0014, SD: 0.0466, median: 0.0058). Comment sentiment averaged slightly positive (mean: 0.0036, SD: 0.1475, median: 0.0005), and showed more variance than mass media article titles or social media posts. (Table 1).

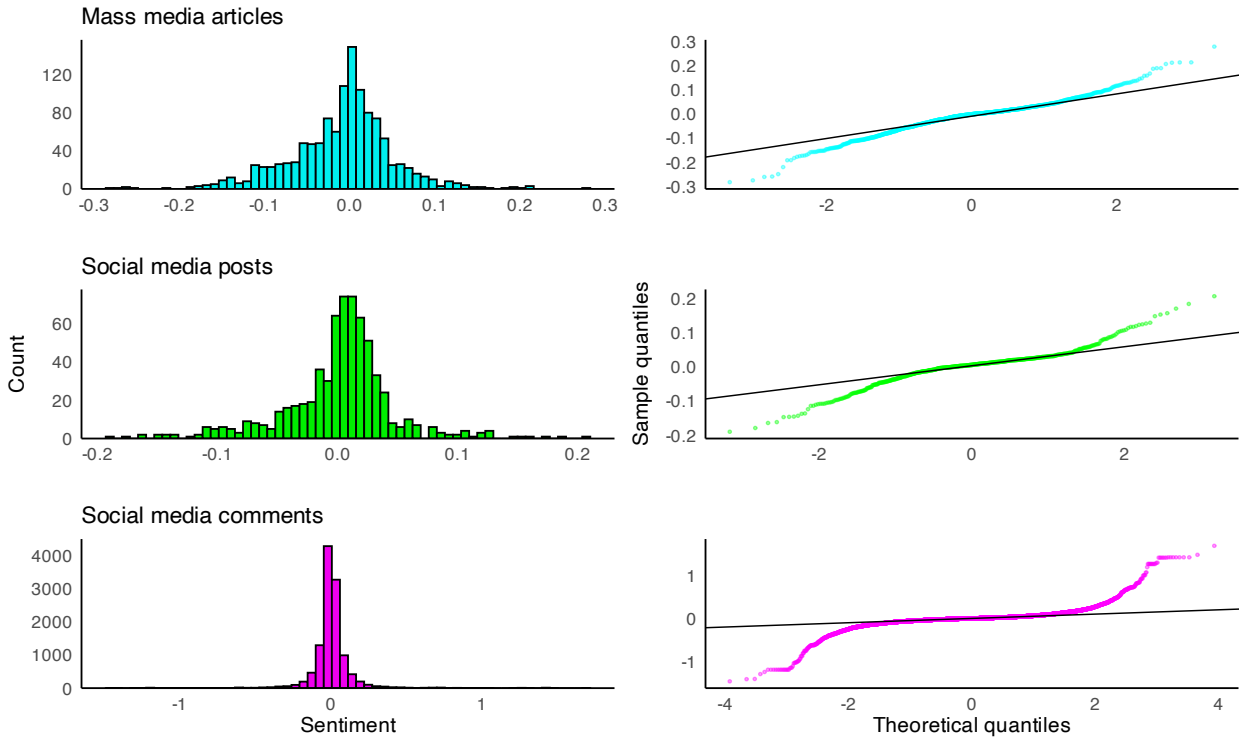


Figure 1. *Sentiment distributions by corpus.* Note: Histograms (left) and normal quantile-quantile plots (right) for mass media articles (n = 1,198), social media posts (n = 662), and social media comments (n = 11,792). Q-Q plots indicate heavy-tailed, non-normal distributions.

Table 1. *Sentiment measures of central tendency by corpus.*

Corpus	n	Mean	Median	SD
media	1198	-0.0097	-0.0016	0.0609
posts	662	0.0014	0.0058	0.0466
comments	11792	0.0036	0.0005	0.1475

Examining theme distributions across the three corpora, we found that mass media coverage and social media posts followed a similar pattern, with Governance and Management

representing the largest proportion of the discourse (48.81% in Mass Media and 55.5% in Social Media Posts), followed by Ecology and Wolf Biology (26% in Mass Media and 26.32% in Social Media Posts), then Rural Livelihoods (18.35% in Mass Media and 10.26% in Social Media posts). In the comments corpus, Rural Livelihoods held the highest proportion (29.6%), followed by Values and Affect (22.6%), and then Ecology and Wolf Biology (20.23%) (Fig. 2).

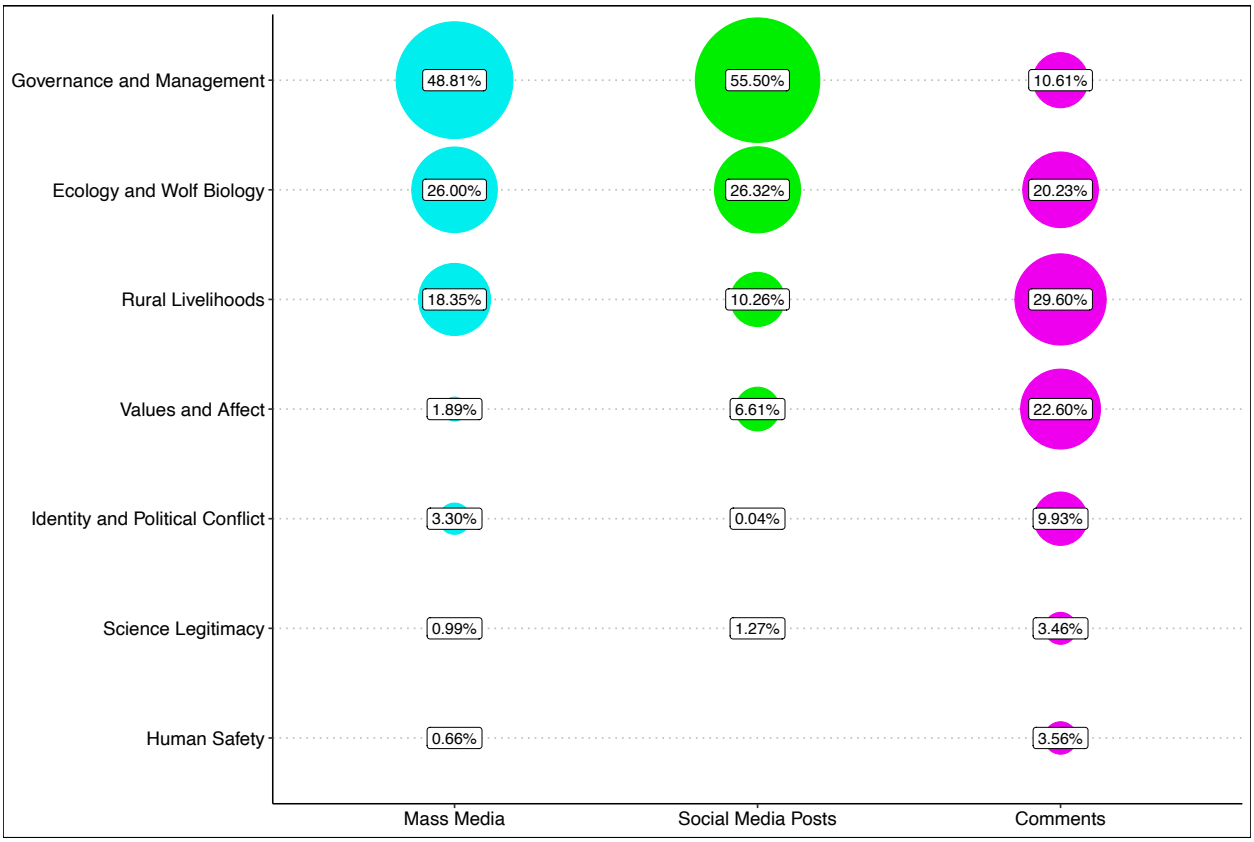


Figure 2. *Thematic Distributions across Corpora***.** Note: Percentages represent the proportion of each theme per corpus based on sentence-level counts.

Mass Media Sentiment

The mean sentiment of mass media article titles of Colorado's wolf reintroduction was variable across media entities, with more publishers exhibiting negative title sentiment means than positive across their collective coverage of the reintroduction (Fig. 3). After controlling for

publisher, we did not find a significant effect of time on the sentiment of article titles (β = -1.40e-06, 95% CI [-9.28e-06, 6.48e-06]).

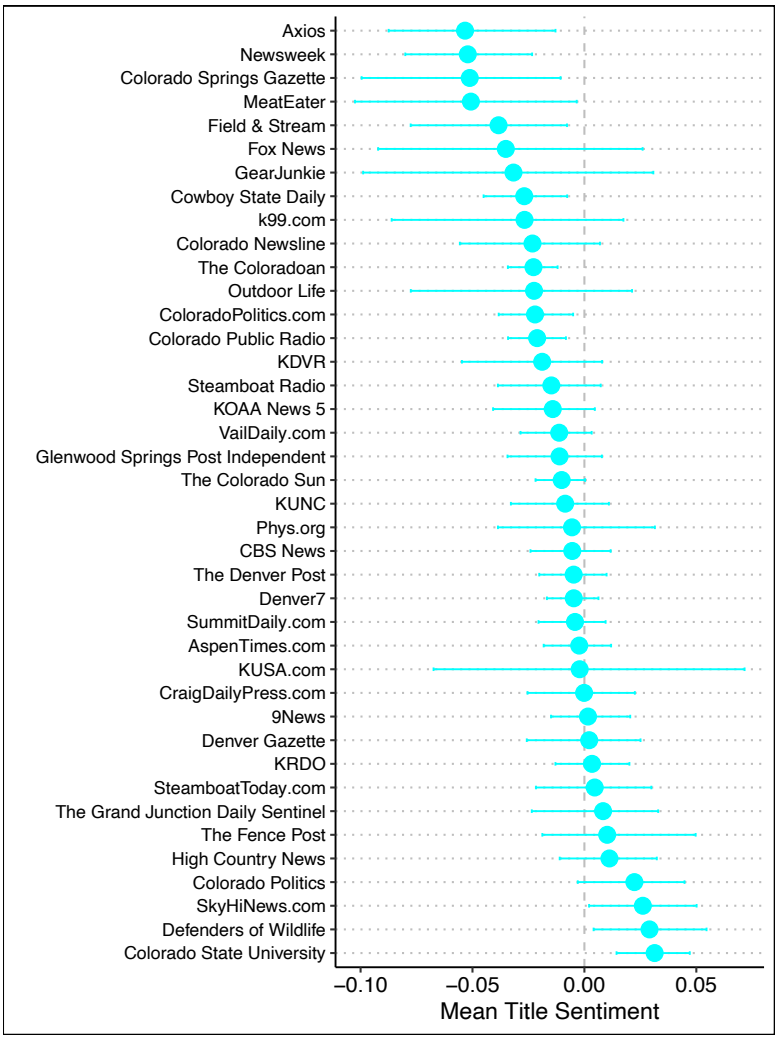


Figure 3. *Mass Media Article Title Sentiment by Publisher***.** Note: Plot includes media channels with more than five articles on Colorado wolf reintroduction. Bootstrapped 95% confidence intervals shown.

Comment Sentiment Modeling

Model selection by AIC identified six candidate models with a delta AIC less than four carrying 77% of the full set weights. Lagged media coverage sentiment, social media post

sentiment, and comment date were supported by five of six top models, and social media platform was supported by all top models. (Table 2).

Table 2. *Model Selection Results for Comment Sentiment.*

Covariates	AIC	Delta	Weight
date + lagged media volume + lagged media sentiment + platform + post sentiment	-17280.48	0.00	0.28
date + lagged media volume + lagged media sentiment + channel type + platform + post sentiment	-17279.59	0.89	0.18
date + platform + lagged media sentiment + post sentiment	-17279.05	1.44	0.14
platform + lagged media sentiment + post sentiment	-17277.68	2.80	0.07
date + channel type + platform + lagged media sentiment + post sentiment	-17277.38	3.10	0.06
date + platform + post sentiment	-17276.50	3.98	0.04

Note: response variable is social media comment sentiment.

We found that 7-day lagged media coverage sentiment showed a non-linear positive relationship with social media comment sentiment (*EDF* = 2.05, *w* = 0.873). As the sentiment of mass media articles on the wolf reintroduction in the seven days prior to a comment increased, the sentiment of social media comments was predicted to increase (Fig. 4). After controlling for platform biases and a negative trend over time, the mass media coverage of the wolf reintroduction in the week leading up to a comment showed a positive relationship with the language valence of that comment.

We also found that social media post sentiment showed a non-linear positive relationship with social media comment sentiment, with the effect existing both above and below zero and leveling off near zero (*EDF* = 2.61, *w* = 1.0). As the sentiment of social media posts became more negative, the comments on that post were predicted to become more negative. Alternately, as posts become more positive, comments were also predicted to follow (Fig. 4).

Social media platform was supported by five of the six top models, with YouTube commenters showing lower predicted mean sentiment than Reddit commenters ($\beta = -0.0052$, 95% CI [−0.0102, −0.0003], *w* = .924) (Fig. 4). Finally, social media comments showed a

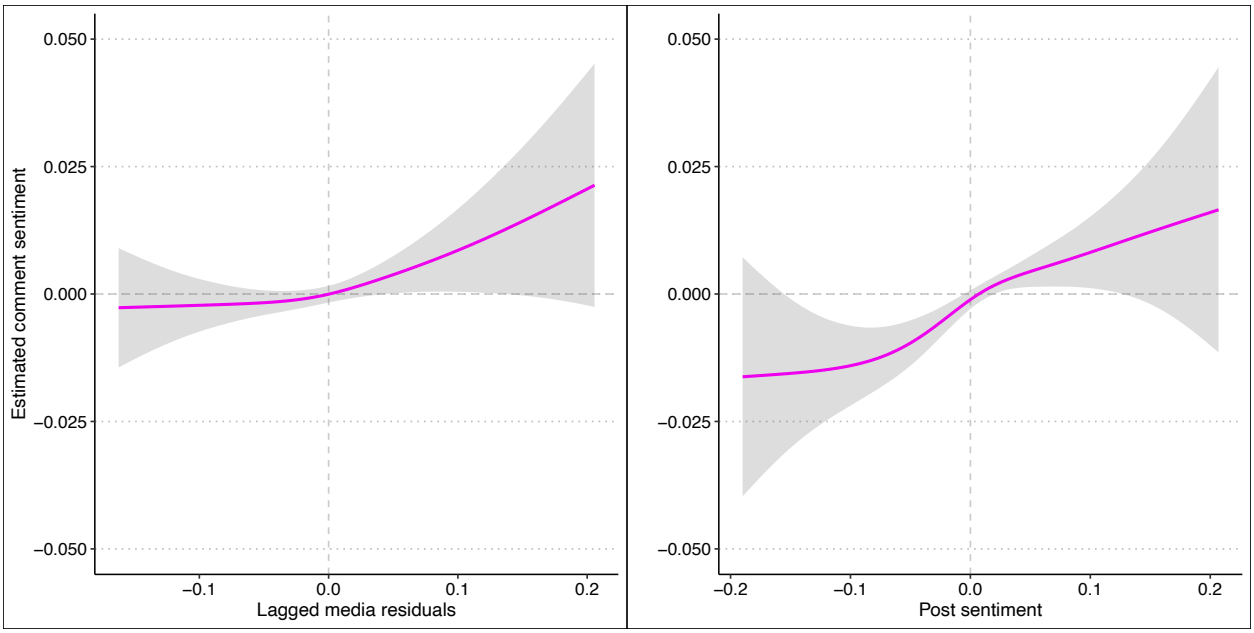


Figure 4. *Model-averaged estimated effects on comment sentiment by mass media coverage and social media posts* Note: Lagged media residuals represent the residuals from a regression of 7-day lagged mass media coverage by 7-day lagged mass media volume, measured as sentence counts. Post sentiment represents the sentiment of the post a comment was produced by.

negative linear relationship with date across our study period ($\beta = -0.0017$, 95% CI [−0.0038, 0.0005], $w = .836$), indicating that after controlling for all other supported covariates, commenters across the wolf reintroduction discursive space used more negative language to discuss the reintroduction as time passed (Fig. 5).

Topic Inferential Modeling

Model selection identified five candidate models with a delta AIC less than four carrying 64% of the full set weights (Table 3). Of all the variables, mass media coverage of Rural Livelihoods was retained by all candidate models and was the only predictor variable to show a theoretically bounded relationship with our response – it increased the probability of the same

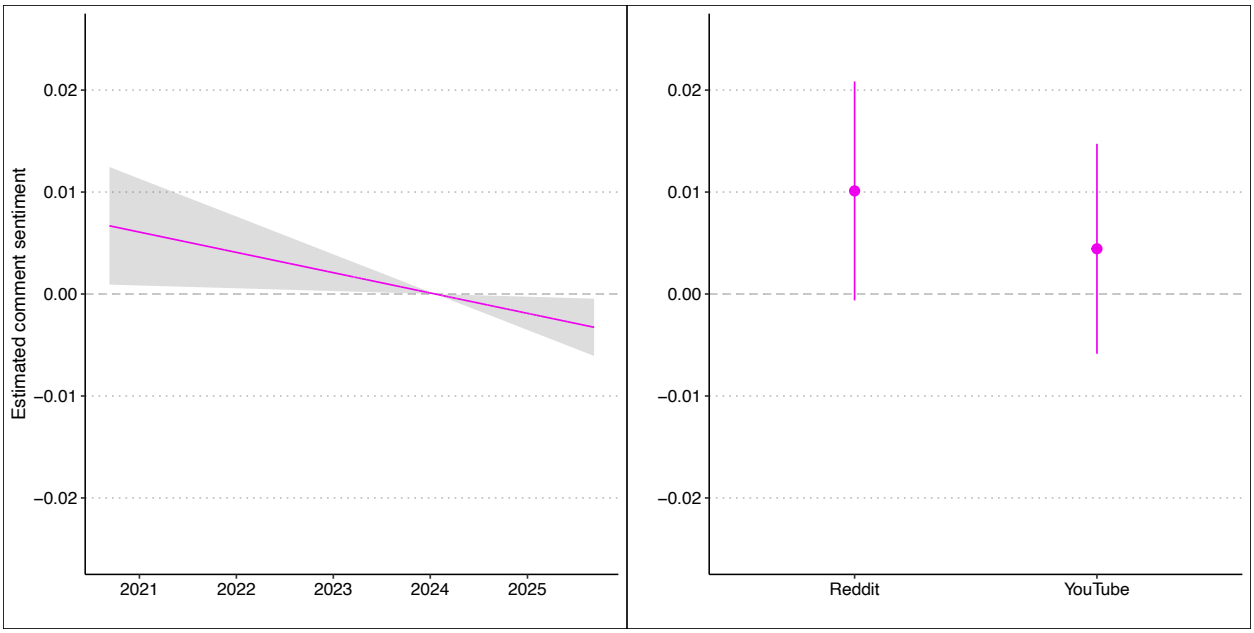


Figure 5. *Model-averaged estimated effects on comment sentiment by date and social media platform.*

theme appearing in comments. After full model averaging, we found that as 7-day lagged mass media residuals of Rural Livelihoods increased, the probability of Rural Livelihoods being discussed in the comments section also increased ($\beta = 0.00562$, 95% CI [0.00301, 0.00823]) (Fig. 6).

Table 3. *Model Selection Results for Comment Thematic Coverage.*

Covariates	AIC	Delta	Weight
channel type + date + media ecology + media rural livelihoods + media science legitimacy + platform + post theme	35385.03	0.00	0.30
channel type + date + media ecology + media rural livelihoods + platform + post theme	35387.11	2.08	0.11
channel type + date + media ecology + media human safety + media rural livelihoods + platform + post theme	35387.16	2.14	0.10
channel type + date + media governance + media rural livelihoods + media science legitimacy + platform + post theme	35387.96	2.93	0.07
channel type + date + media ecology + media human safety + media rural livelihoods + media values affect + platform + post theme	35388.21	3.18	0.06

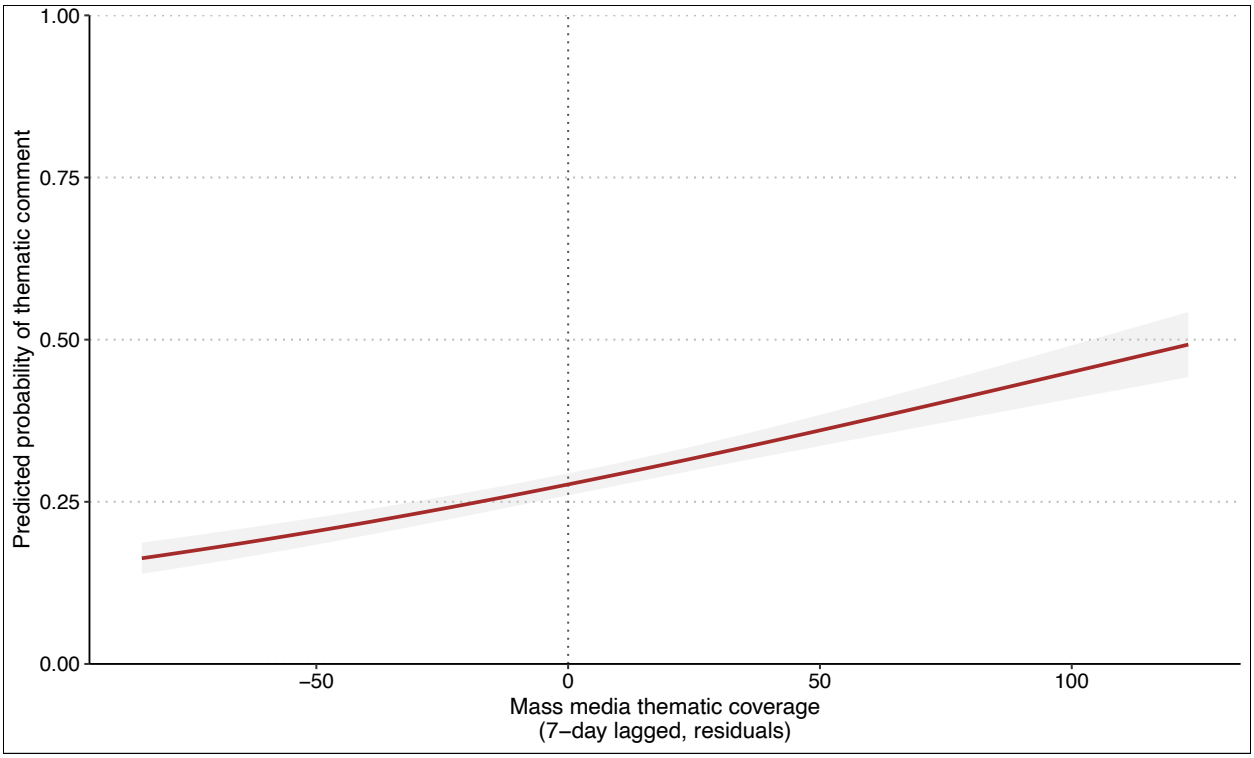


Figure 6. *Rural Livelihoods predicted theme probability in social media comments by mass media coverage***.** Note: Mass media residuals represent the residuals of a regression of 7-day lagged mass media coverage by 7-day lagged mass media volume, measured as sentence counts.

A Granger causality test on sentence-level counts of Rural Livelihoods theme showed strong evidence for a one-way predictive relationship, with lagged media coverage of Rural Livelihoods predicting the same theme appearing in social media comments ($F = 11.198$, $p = 0.00095$) (Fig. 7). A reverse causality test of this theme (social media comments predicting mass media coverage) was not significant ($F = 0.1892$, $p = 0.664$).

Discussion

This study examined the sentiment and thematic content of online Colorado wolf reintroduction discourse and the extent to which prior media coverage and social media posts predicted the

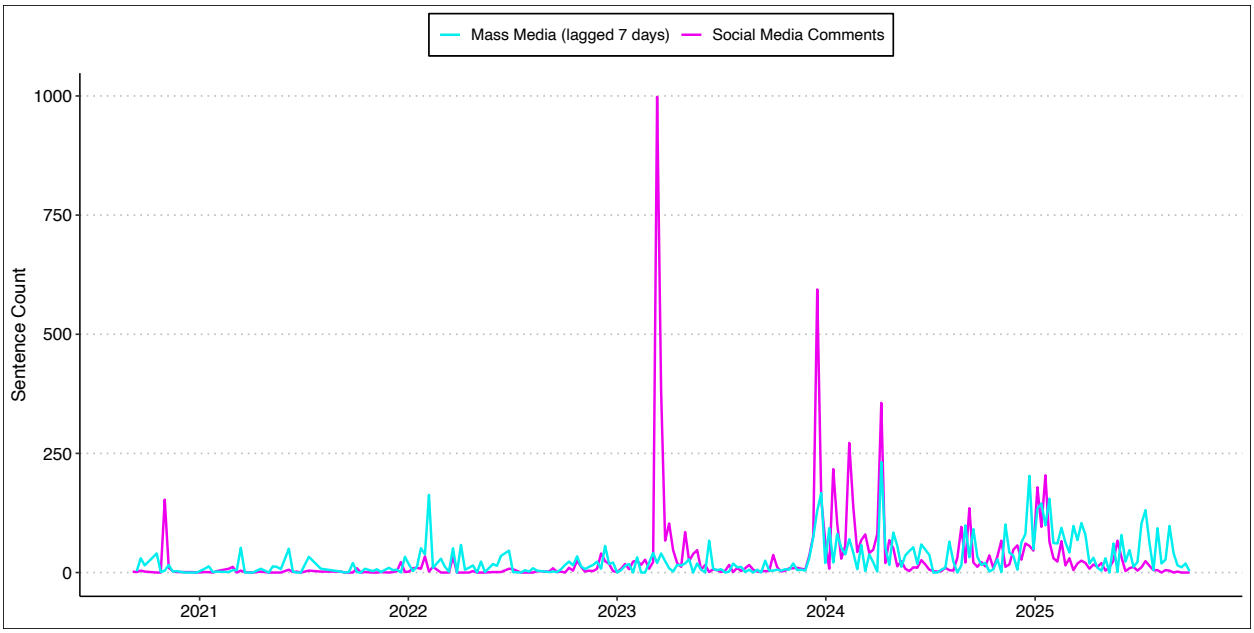


Figure 7. *Rural Livelihoods theme prevalence in mass media coverage vs. social media comments***.** Note: y-axis shows counts of total sentences in each corpus labeled with Rural Livelihoods theme. Mass media coverage is lagged by 7 days.

content of social media comments. Sentiment in all three corpora centered near neutral, with mass media titles skewed slightly negative and posts and comments slightly positive. Sentiment of mass media article titles showed more publishers with negative means than positive. Thematic composition differed by corpus: governance and management dominated mass media and posts, while Rural Livelihoods held the largest share of comments. We found that lagged mass media sentiment and originating post sentiment both predicted comment sentiment, and that lagged media coverage of Rural Livelihoods predicted the prevalence of the same theme in subsequent comments, a finding additionally supported by a Granger causality test. These patterns are consistent with second-level agenda-setting, though the study's observational design precludes true causal inference.

Our analysis of mass media sentiment on Colorado's wolf reintroduction found more publishers with a negative valence bias than with a positive one. Seven publishers in our dataset - Axios, Newsweek, Colorado Springs Gazette, MeatEater (a podcast), Cowboy State Daily, The

Coloradoan, and Colorado Public Radio - had consistently negative article titles. Conversely, only two publishers - SkiHiNews.com and Defenders of Wildlife - had consistently positive titles. This finding supports the work of Niemiec et al., 2020, who found that media coverage of wolf reintroduction disproportionately emphasized a narrow range of negative impacts. Consistent negative coverage of wildlife management carries real-world consequences. News media are a primary channel through which public attitudes toward wolves are formed, and repeated negative coverage has been associated with more negative attitudes toward the species as exposure accumulates (Arbieu et al., 2019; Houston et al., 2010). Negatively framed reporting of low-frequency events has been shown to amplify perceived risk and potentially reduce tolerance for predators (Bombieri et al., 2018; Macdonald et al., 2023). Framing experiments support this relationship, showing that negative frames yield decreases in public tolerance toward predators (Casola et al., 2020). Given that tolerance shows a strong relationship with public acceptance of management decisions (Treves & Bruskotter, 2014), the negative valence of coverage observed in our study system may have an unmeasured negative influence on public support for the wolf reintroduction program beyond its effect on online discursive spaces. Additionally, previous work on media coverage found that audiences show greater psychological activation in response to negative stories (Robertson et al., 2023; Soroka et al., 2019), suggesting a publication-based incentive that extends beyond wolf reintroduction and into general media trends.

Across the public discourse, we found that the sentiment of stakeholder media agendas held a stronger relationship than mass media agendas with commenters' sentiment. When wolf reintroduction social media posts exhibited positive or negative sentiment, either in written text or video transcripts, they tended to generate comments in the same direction. This aligns with

previous research that found framing of social media-based wildlife content influenced the tone of comments (Ballejo et al., 2021). Social media comments function as social cues that readers use to gauge prevailing opinion, and exposure to negative sentiment or uncivil comment threads can shift readers' perceptions and increase polarization on issues (Anderson et al., 2014). Further, when sentiment spreads from posts into comments, the resulting environment can influence the attitudes of a larger population of users who read without posting (Zerback & Fawzi, 2017). In wildlife management contexts, attitudes expressed and encountered in online discussions are linked to the level of tolerance or intolerance people have for wolves, and such tolerance has a demonstrated effect on public support, or lack thereof, for conservation and management decisions (Bombieri et al., 2018; Casola et al., 2020).

Our findings indicate that platform-specific trends exist in the sentiment of wolf reintroduction discourse, with YouTube showing more negative comments than Reddit. While there is a body of research on positivity and negativity biases in discourse on various social media platforms (Masciantonio et al., 2025; Waterloo et al., 2018), little research has been done to empirically test these biases in wildlife-specific contexts. We believe these are novel findings that illustrate either algorithmic biases by social media platforms, responsible for supporting and promoting content that aligns with end users' values and ideologies (Tasente, 2025; Van Der Breggen et al., 2025), or user self-selection biases, e.g., users choosing platforms for discussions that align with their preferred language on wildlife issues and discourse in general (Bruns, 2019).

We found that the sentiment of social media comments on Colorado's wolf reintroduction trended more negatively over time, after accounting for confounding variables. We hypothesize two potential drivers to explain this trend: 1) real-world events created

meaningful negative changes subsequently reflected in the discourse (e.g., wolf mortalities, livestock depredations, federal intervention into the program), and 2) the failure to meet CPW's pre-defined 70% survival rate, set at the beginning of the reintroduction to trigger protocol review (Colorado Parks and Wildlife, 2023), may have resulted in a perception that the reintroduction process is failing, increasing use of negative language by multiple stakeholders across ideological spectrums and reflected in the online discursive space.

The theme "Rural Livelihoods," occupying the largest portion of the comment corpus, is disproportionate to the share of Americans with direct experience with livestock production (USDA, 2026). However, online comment data are often produced by a small, non-representative minority of users, so thematic prevalence may represent an active commenting subset of people rather than the general public (Oswald et al., 2025). This active commenting subset may represent agriculturalists who are leveraging social media to promote their own self-interests and defend production agriculture against the wolf reintroduction, aligning with prior research showing that agriculturalists adopt social media to combat negative messaging about production agriculture and advance their own operations (Meyers et al., 2011; White et al., 2014).

Our results show that this active commenting subset may also be driven in part by mass media agendas. Above average media coverage of "Rural Livelihoods" in the preceding week increased the probability that the same theme appeared in subsequent online comments. This pattern is consistent with second-level agenda-setting, in which an issue's salient attributes, represented here by thematic content, transfer from media coverage into public discussion (McCombs et al., 1997; Wang et al., 2023). This finding adds context to previous work by Niemiec et al. (2020) who found that mass media disproportionately covered the potential negative effects of Colorado's wolf reintroduction on livestock more than other content within a

one-year sample. While we did not find that Rural Livelihoods was disproportionately covered more than other themes in our five-year sample, our results suggest that when mass media cover Rural Livelihoods, this theme is more likely to appear in online discourse. We did not find evidence of reverse agenda-setting (e.g., social media comments setting the salient themes for mass media) for this theme, nor did we find evidence of agenda-setting for any other themes identified. This highlights a disconnect between what mass media proportionally cover and what most shapes subsequent online discussion. Although Governance and Management constituted the largest share of mass media coverage, it was coverage of Rural Livelihoods, a relatively minor share of the media agenda, that predicted comment content.

Management and Communication Implications

The success or failure of wildlife reintroductions is often determined by public tolerance of species rather than biological outcomes (Bruskotter & Wilson, 2014; Treves & Bruskotter, 2014). Public tolerance is sensitive to the information environment surrounding the reintroduction program, including social media discourse (Arbieu et al., 2019; Bombieri et al., 2018). Consequently, the online discursive environment itself may be viewed as a management variable. The second-level agenda-setting effect observed here indicates that certain themes emphasized in media agendas transfer into public discussion. When mass media coverage centers specific salient attributes of an issue, wildlife managers and communicators should anticipate a correspondingly narrowed public discourse emphasizing these attributes. Managers tracking online commentary may benefit from understanding which specific themes transfer in order to anticipate shifts in the public conversation. Beyond thematic content, our finding that emotional valence transfers from influencers and stakeholder media

sources to comments suggests the tone of public discourse about wolf management is sensitive to which sources participate in it, a dynamic managers and communicators may account for when interpreting online sentiment and creating their own social media posts. Because science-based information and trust in the managing agency are both associated with more moderate attitudes toward carnivores (Arbieu et al., 2019; Bruskotter & Wilson, 2014), consistently releasing program data through channels the public considers credible may temper polarization. This could be particularly helpful after significant negative events, such as livestock predations, negative interactions between wolves and pets, or contentious management interventions.

For online communication, the propagation of social media post sentiment into comments implies that the framing of posts shapes the tone of the discussion it generates. Because positively framed content communicating the benefits of a species has been shown to increase tolerance of predators (Casola et al., 2020), and comment threads serve as social cues that shape the perceptions of the larger reading audience (Anderson et al., 2014; Lee & Jang, 2010), selectively posting content to engage stakeholders is part of successfully managing reintroduction communication. For example, Slagle et al. (2013) demonstrated that short messages emphasizing the ecological benefits of black bears, paired with risk management information, produced increases in public tolerance relative to posts containing only species biology. Similarly, Lute and Gore (2014) found that framing wolf management around a shared stewardship identity offered a bridging frame across otherwise polarized stakeholder groups. Coupled with previous research, our findings give reintroduction managers an empirical evidence base for designing online communication strategies to facilitate positive discourse.

Finally, the data and methods used here carry an implicit secondary use: social media content can be monitored as a near real-time indicator of emerging conflict, shifting public perceptions, and emergent salient themes (Di Minin et al., 2015; Ladle et al., 2016), offering a tool to evaluate the effectiveness of agency communications and build future communication strategies to support management initiatives.

Limitations

This study is observational, so the reported associations cannot establish causation, only relationships. The study design offers agenda setting as one explanation for the prevalence of Rural Livelihoods in the comments corpus, but a similar thematic distribution could arise from non-representative participation by an active minority of users (Oswald et al., 2025) or from platform self-selection among users with shared prior views.

Conclusion

Overall, our findings support second-level agenda-setting in an active carnivore reintroduction. Specific thematic content, when emphasized in mass media coverage, transferred into subsequent online public discussion, indicating that media framing of issues shapes the attributes repeated in public discourse. Language valence, when emphasized by stakeholder media entities via social media posts, predicted the valence of the discourse that followed. This study also found a convergence of top-down and bottom-up dynamics in online discursive spaces — mass media coverage concentrated on Governance and Management, while the public used decentralized social media channels to voice concerns and lived experiences focusing largely on

Rural Livelihoods. The themes most covered by mass media were not proportionally represented in the online space; rather, the subset of users most active in the comments appears to be those whose concerns the mass media coverage underrepresented. For wildlife agencies, this suggests a need to anticipate concerns regarding rural livelihoods and lifestyles and address them directly in communication rather than treating coverage of policy and management as sufficient. Proactively framing program information, particularly around livestock and other rural impacts, may shape discourse in directions more conducive to management support. Future research could examine whether the salience transfer observed in this system extends into other carnivore species, regions, or platforms, and whether the active commenting subset observed here reflects broader public opinion. The success of carnivore reintroductions depends as much on public opinion as on biological outcomes; therefore, evaluating how mass media and stakeholder media framing predicts public opinion is an essential part of promoting carnivore conservation and human-carnivore coexistence.

References

Akiba, T., Sano, S., Yanase, T., Ohta, T., & Koyama, M. (2019). Optuna: A Next-generation Hyperparameter Optimization Framework. *Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining, KDD '19*, 2623–2631. https://doi.org/10.1145/3292500.3330701

Anderson, A. A., Brossard, D., Scheufele, D. A., Xenos, M. A., & Ladwig, P. (2014). The "Nasty Effect:" Online Incivility and Risk Perceptions of Emerging Technologies: Crude comments and concern. *Journal of Computer-Mediated Communication*, *19*(3), 373–387. https://doi.org/10.1111/jcc4.12009

Arbieu, U., Mehring, M., Bunnefeld, N., Kaczensky, P., Reinhardt, I., Ansorge, H., Böhning-Gaese, K., Glikman, J. A., Kluth, G., Nowak, C., & Müller, T. (2019). Attitudes towards returning wolves (Canis lupus) in Germany: Exposure, information sources and trust matter. *Biological Conservation*, *234*, 202–210. https://doi.org/10.1016/j.biocon.2019.03.027

Ballejo, F., Plaza, P. I., & Lambertucci, S. A. (2021). Framing of visual content shown on popular social media may affect viewers' attitudes to threatened species. *Scientific Reports*, *11*(1), 13512. https://doi.org/10.1038/s41598-021-92815-7

Bombieri, G., Nanni, V., Delgado, M., Fedriani, J. M., López-Bao, J. V., Pedrini, P., & Penteriani, V. (2018). Content Analysis of Media Reports on Predator Attacks on Humans: Toward an Understanding of Human Risk Perception and Predator Acceptance. *BioScience*, *68*(8), 577–584. https://doi.org/10.1093/biosci/biy072

Braun, K., Döringer, S., & Heurich, M. (2025). A discourse analysis of print media coverage on the recolonization of the wolf in Germany. *Biological Conservation*, *310*. https://doi.org/10.1016/j.biocon.2025.111351

Bruns, A. (2019). *Are Filter Bubbles Real?* Wiley. https://www.wiley.com/en-us/are-filter-bubbles-real-p-9781509536443

Bruskotter, J. T., & Wilson, R. S. (2014). Determining Where the Wild Things will be: Using Psychological Theory to Find Tolerance for Large Carnivores. *Conservation Letters*, *7*(3), 158–165. https://doi.org/10.1111/conl.12072

Casola, W. R., Rushing, J., Futch, S., Vayer, V., Lawson, D. F., Cavalieri, M. J., Larson, L. R., & Peterson, M. N. (2020). How do YouTube videos impact tolerance of wolves? *Human Dimensions of Wildlife*, *25*(6), 531–543. https://doi.org/10.1080/10871209.2020.1773582

Chandelier, M., Steuckardt, A., Mathevet, R., Diwersy, S., & Gimenez, O. (2018). Content analysis of newspaper coverage of wolf recolonization in France using structural topic modeling. *Biological Conservation*, *220*, 254–261. https://doi.org/10.1016/j.biocon.2018.01.029

Colorado Parks and Wildlife. (2023). *Colorado Wolf Restoration and Management Plan Final*.

Crown, C. A., & Doubleday, K. F. (2017). 'Man-eaters' in the Media: Representation of Human-leopard Interactions in India Across Local, National, and International Media. *Conservation and Society*, *15*(3), 304–312. https://doi.org/10.4103/cs.cs_15_92

DeConcini, J. & Rice, A. H. (2021). The Influence of Social Media Content Framing on Audience Perceptions of the Wild Horse and Burro Controversy. *Journal of Agricultural Education*, *62*(4), 16–36. https://doi.org/10.5032/jae.2021.04015

Depoix, J. (2018). *Youtube-transcript-api* [Python]. https://github.com/jdepoix/youtube-transcript-api

Di Minin, E., Tenkanen, H., & Toivonen, T. (2015). Prospects and challenges for social media data in conservation science. *Frontiers in Environmental Science*, *3*. https://doi.org/10.3389/fenvs.2015.00063

Gonzalez, M. N., Heid, T. N., & Niemiec, R. (2024). Characterizing social conflict over wolf reintroduction in Colorado: A theoretical model of intergroup conflict. *People and Nature*, *6*(5), 2001–2013. https://doi.org/10.1002/pan3.10694

Granger, C. W. J. (1969). Investigating Causal Relations by Econometric Models and Cross-spectral Methods. *Econometrica*, *37*(3), 424–438. https://doi.org/10.2307/1912791

Grootendorst, M. (2022). *BERTopic: Neural topic modeling with a class-based TF-IDF procedure* (arXiv:2203.05794). arXiv. http://arxiv.org/abs/2203.05794

Hill, C. H., Fresneda, J. E., & Anandarajan, M. (2025). The wisdom of the lexicon crowds: Leveraging on decades of lexicon-based sentiment analysis for improved results. *Journal of Big Data*, *12*(1), 129. https://doi.org/10.1186/s40537-025-01186-7

Houston, M. J., Bruskotter, J. T., & Fan, D. (2010). Attitudes Toward Wolves in the United States and Canada: A Content Analysis of the Print News Media, 1999–2008. *Human Dimensions of Wildlife*, *15*(5), 389–403. https://doi.org/10.1080/10871209.2010.507563

Hunter, M. L., Van Wassenhove, L. N., Besiou, M., & van Halderen, M. (2013). The Agenda-Setting Power of Stakeholder Media. *California Management Review*, *56*(1), 24–49. https://doi.org/10.1525/cmr.2013.56.1.24

Jacobson, S. K., Langin, C., Carlton, J. S., & Kaid, L. L. (2012). Content Analysis of Newspaper Coverage of the Florida Panther. *Conservation Biology*, *26*(1), 171–179. https://doi.org/10.1111/j.1523-1739.2011.01750.x

Ladle, R. J., Correia, R. A., Do, Y., Joo, G., Malhado, A. C., Proulx, R., Roberge, J., & Jepson, P. (2016). Conservation culturomics. *Frontiers in Ecology and the Environment*, *14*(5), 269–275. https://doi.org/10.1002/fee.1260

Lee, E.-J., & Jang, Y. J. (2010). What Do Others' Reactions to News on Internet Portal Sites Tell Us? Effects of Presentation Format and Readers' Need for Cognition on Reality Perception. *Communication Research*, *37*(6), 825–846. https://doi.org/10.1177/0093650210376189

Macdonald, C., McEntee, K., & Wester, J. (2023). Values, attitudes, and media exposure: Public perception of sharks and shark conservation in the USA. *Biological Conservation*, *286*, 110305. https://doi.org/10.1016/j.biocon.2023.110305

Manfredo, M. J. (2008). *Who Cares About Wildlife?: Social Science Concepts for Exploring Human-Wildlife Relationships and Conservation Issues*. Springer US. https://doi.org/10.1007/978-0-387-77040-6

Manfredo, M. J., Teel, T. L., Don Carlos, A. W., Sullivan, L., Bright, A. D., Dietsch, A. M., Bruskotter, J., & Fulton, D. (2020). The changing sociocultural context of wildlife conservation. *Conservation Biology*, *34*(6), 1549–1559. https://doi.org/10.1111/cobi.13493

Masciantonio, A., Heiser, N., & Cherbonnier, A. (2025). Unveiling the Positivity Bias on Social Media: A Registered Experimental Study on Facebook, Instagram, and X. *Collabra: Psychology*, *11*(1), 132410. https://doi.org/10.1525/collabra.132410

McCombs, M. (2005). A Look at Agenda-setting: Past, present and future. *Journalism Studies*, *6*(4), 543–557. https://doi.org/10.1080/14616700500250438

McCombs, M. E., & Shaw, D. L. (1972). The Agenda-Setting Function of Mass Media. *The Public Opinion Quarterly*, *36*(2), 176–187.

McCombs, M., Llamas, J. P., Lopez-Escobar, E., & Rey, F. (1997). Candidate Images in Spanish Elections: Second-Level Agenda-Setting Effects. *Journalism & Mass Communication Quarterly*, *74*(4), 703–717. https://doi.org/10.1177/107769909707400404

McCombs, M., Lopez-Escobar, E., & Llamas, J. P. (2000). Setting the Agenda of Attributes in the 1996 Spanish General Election. *Journal of Communication*, *Spring*.

Meraz, S. (2011). Using Time Series Analysis to Measure Intermedia Agenda-Setting Influence in Traditional Media and Political Blog Networks. *Journalism & Mass Communication Quarterly*, *88*(1), 176–194. https://doi.org/10.1177/107769901108800110

Meyers, C., Irlbeck, E., Graybill-Leonard, M., & Doerfert, D. (2011). Advocacy in Agricultural Social Movements: Exploring Facebook as a Public Relations Communication Tool. *Journal of Applied Communications*, *95*(3). https://doi.org/10.4148/1051-0834.1166

Nie, M. (2001). The Sociopolitical Dimensions of Wolf Management and Restoration in the United States. *Human Ecology Review*, *8*(1).

Niemiec, R., Berl, R. E. W., Gonzalez, M., Teel, T., Camara, C., Collins, M., Salerno, J., Crooks, K., Schultz, C., Breck, S., & Hoag, D. (2020). Public perspectives and media reporting of wolf reintroduction in Colorado. *PeerJ*, *8*, e9074. https://doi.org/10.7717/peerj.9074

Niemiec, R., Berl, R. E. W., Gonzalez, M., Teel, T., Salerno, J., Breck, S., Camara, C., Collins, M., Schultz, C., Hoag, D., & Crooks, K. (2022). Rapid changes in public perception

toward a conservation initiative. *Conservation Science and Practice*, *4*(4), e12632. https://doi.org/10.1111/csp2.12632

Ooms, J. (2025). *Compact Language Detector 2* (Version 1.2.6) [R]. https://cran.r-project.org/web/packages/cld2/refman/cld2.html

Oswald, L., Schulz, W. S., & Lorenz-Spreen, P. (2025). Disentangling participation in online political discussions with a collective field experiment. *Science ADvAnceS*.

Python Software Foundation. (n.d.). *Python language reference, version 2.7* [Dataset]. Retrieved http://www.python.org

R Core Team. (2021). *R: A language and environment for statistical computing.* [Vienna, Austria]. R Foundation for Statistical Computing. https://www.R-project.org/

Ripple, W. J., Estes, J. A., Beschta, R. L., Wilmers, C. C., Ritchie, E. G., Hebblewhite, M., Berger, J., Elmhagen, B., Letnic, M., Nelson, M. P., Schmitz, O. J., Smith, D. W., Wallach, A. D., & Wirsing, A. J. (2014). Status and Ecological Effects of the World's Largest Carnivores. *Science*, *343*(6167), 1241484. https://doi.org/10.1126/science.1241484

Robertson, C. E., Pröllochs, N., Schwarzenegger, K., Pärnamets, P., Van Bavel, J. J., & Feuerriegel, S. (2023). Negativity drives online news consumption. *Nature Human Behaviour*, *7*(5), 812–822. https://doi.org/10.1038/s41562-023-01538-4

Schroeder, S. A., Landon, A. C., Fulton, D. C., & McInenly, L. E. (2021). Social identity, values, and trust in government: How stakeholder group, ideology, and wildlife value orientations relate to trust in a state agency for wildlife management. *Biological Conservation*, *261*, 109285. https://doi.org/10.1016/j.biocon.2021.109285

Soroka, S., Fournier, P., & Nir, L. (2019). Cross-national evidence of a negativity bias in psychophysiological reactions to news. *Proceedings of the National Academy of Sciences*, *116*(38), 18888–18892. https://doi.org/10.1073/pnas.1908369116

Tasente, T. (2025). Understanding the Dynamics of Filter Bubbles in Social Media Communication: A Literature Review. *Vivat Academia*, 1–21. https://doi.org/10.15178/va.2025.158.e1591

Trainotti, N., Fedrigotti, C., Malavasi, S., Pedrini, P., & Bombieri, G. (2024). Wolf coverage and framing by newspapers across the Italian Eastern Alps. *Human Dimensions of Wildlife*, *29*(2), 176–193. https://doi.org/10.1080/10871209.2023.2212691

Treves, A., & Bruskotter, J. (2014). Tolerance for Predatory Wildlife. *Science*, *344*(6183), 476–477. https://doi.org/10.1126/science.1252690

USDA. (2026). *Ag and Food Statistics: Charting the Essentials—Farming and Farm Income*. USDA. Ag and Food Statistics: Charting the Essentials - Farming and Farm Income. https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/farming-and-farm-income

Van Der Breggen, M. M., Gonçalves, J., & Boeren, D. (2025). Polarization by recommendation: Analyzing YouTube's polarization dynamics around Dutch political parties. *Journal of Information Technology & Politics*, 1–15. https://doi.org/10.1080/19331681.2025.2544653

Venables, W. N., & Ripley, B. D. (2003). *Modern Applied Statistics with S, 4th ed*. Springer. https://www.stats.ox.ac.uk/pub/MASS4/

Wang, X., Chen, L., Shi, J., & Tang, H. (2023). Who Sets the Agenda? The Dynamic Agenda Setting of the Wildlife Issue on Social Media. *Environmental Communication*, *17*(3), 245–262. https://doi.org/10.1080/17524032.2021.1901760

Waterloo, S. F., Baumgartner, S. E., Peter, J., & Valkenburg, P. M. (2018). Norms of online expressions of emotion: Comparing Facebook, Twitter, Instagram, and WhatsApp. *New Media & Society*, *20*(5), 1813–1831. https://doi.org/10.1177/1461444817707349

Waters, K. M., & Mars, M. M. (2021). Rancher perceptions of and attitudes toward Mexican gray wolves: An exploration of community dialogue. *Human Dimensions of Wildlife*, *26*(1), 48–64. https://doi.org/10.1080/10871209.2020.1793034

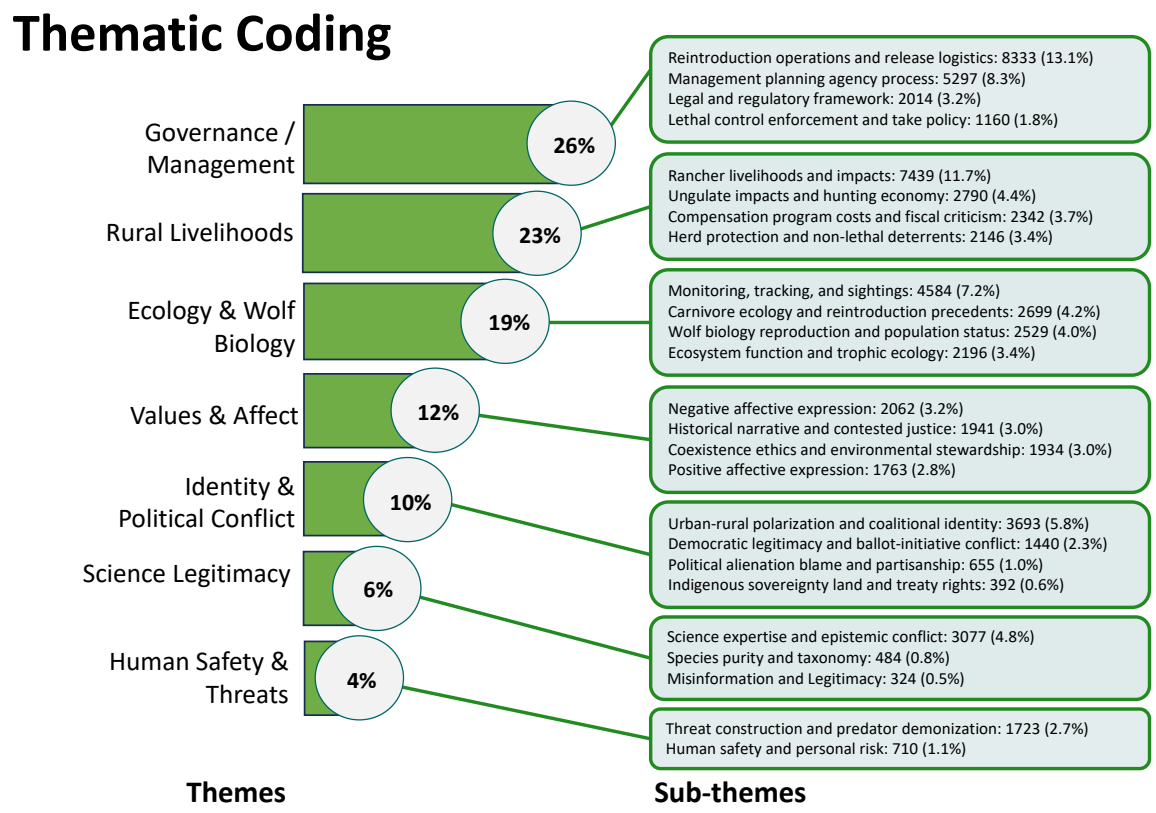
White, D., Meyers, C., Doerfert, D., & Irlbeck, E. (2014). Exploring Agriculturalists' Use of Social Media for Agricultural Marketing. *Journal of Applied Communications*, *98*(4). https://doi.org/10.4148/1051-0834.1094

Wood, S. N. (2011). Fast Stable Restricted Maximum Likelihood and Marginal Likelihood Estimation of Semiparametric Generalized Linear Models. *Journal of the Royal Statistical Society Series B: Statistical Methodology*, *73*(1), 3–36. https://doi.org/10.1111/j.1467-9868.2010.00749.x

Zerback, T., & Fawzi, N. (2017). Can online exemplars trigger a spiral of silence? Examining the effects of exemplar opinions on perceptions of public opinion and speaking out. *New Media & Society*, *19*(7), 1034–1051. https://doi.org/10.1177/1461444815625942

Appendices

Appendix A. Thematic Coding Results



Note: Percentages reflect total sentence counts coded to each theme across mass media, social media post, and social media comment corpora.

Appendix B. Example Sentences from Thematic Codes

Theme	Sub-theme	Sentence
Ecology and Wolf Biology	Broader carnivore ecology and reintroduction precedents	NE Washington has a pack density that's 3x what's in Yellowstone.
	Ecosystem function and trophic ecology	Restoring balance to the ecosystem is part of conservation, proving the reintroduction of wolves is conservation
	Monitoring tracking and sightings	A new Colorado Parks and Wildlife (CPW) map shows where wolf activity is present across the state nearly two years after being introduced back into its ecosystem.
	Wolf biology reproduction and population status	The average pack size in Oregon is around five wolves, with only two packs numbering more than 10 members.
Governance and Management	Legal and regulatory framework	Section 10(j) in the federal Endangered Species Act, which was also used in the gray wolf reintroduction process, allows the federal government to designate a population of a listed species , like the wolverines , as experimental if they are set to be released into natural habitat outside their current range, like Colorado.
	Lethal control enforcement and take policy	The federal agency proposed complementary rules in February that include lethal management under certain conditions.
	Management planning agency process	Colorado Parks and Wildlife commission votes to create wolf management plan.
	Reintroduction operations and release logistics	The first 10, from Oregon, were released in Summit and Grand counties in December 2023.
Human Safety and Threats	Human safety and personal risk	Carry a gun when you go in the wilderness.
	Threat construction and predator demonization	They will kill just to train their pups and not even eat the carcass.

Identity and Political Conflict	Democratic legitimacy and ballot-initiative conflict	November will show whether or not the numbers speak for themselves.
	Indigenous sovereignty land and treaty rights	In the resolution passed by the council, members expressed concerns over how it would impact their tribal lands and resources, including wildlife and livestock.
	Political alienation blame and partisanship	It is no different than woke morons claiming to be oppressed and then trying to bully everyone to think like they do.
	Urban-rural polarization and coalitional identity	Thanks to the morons in Summit county and the front range.
Rural Livelihoods	Compensation program costs and fiscal criticism	The governor's office has not yet explained how more wolves will be paid for.
	Herd protection and non-lethal deterrents	It can include range riders working to make sure that they know where the wolves are.
	Rancher livelihoods and impacts	This was the first sheep that had been killed or injured by a wolf in the county since reintroduction.
	Ungulate impacts and hunting economy	The wolves will destroy the deer and elk herds.
Science Legitimacy	Misinformation and Legitimacy	I hope people wake up to the truth and facts of the situation!!
	Science expertise and epistemic conflict	Ballot box biology
	Species purity and taxonomy	The Grey Wolves that are being released into the wild in Colorado are not native and are much larger than the native wolves of the past.
Values and Affect	Coexistence ethics and environmental stewardship	Fuckin white guys whose ancestors helped destroy the ecosystems that were just fine when it was us natives who lived for 10s of thousands of years with the natural way think they know better than our mother.

Historical narrative and contested justice	Wolves had this land long before we did.
Negative affective expression	How stupid can you be.
Positive affective expression	YA LOVE TO SEE IT