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Content Analysis of Media Coverage of the Illegal Lynx Reintroduction to the
Cairngorms; Potential to Hinder Future Rewilding Efforts?
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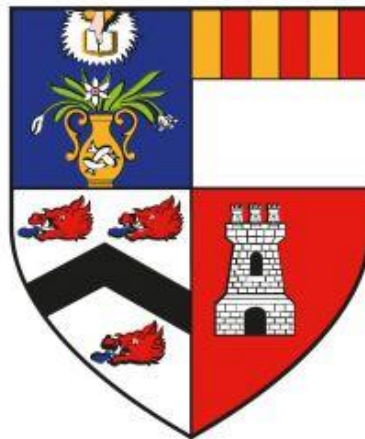
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Abstract

Unauthorised reintroductions of species, colloquially referred to as guerrilla rewilding, are often carried out by individuals frustrated by delays in official rewilding programmes. Such illegal reintroductions are commonly assumed to risk undermining formal conservation policy by provoking negative public and political reactions. However, whether these events function as focusing events capable of shaping policy agendas remains unclear. This study examines how an illegal release was framed in British print media and assesses its potential to generate sustained policy-relevant attention. Using Structural Topic Modelling, UK newspaper coverage was analysed over a multi-year period surrounding the January 2025 illegal release of four Eurasian lynx (*Lynx lynx*) into the Cairngorms National Park in Scotland.

The results showed a sharp but short-lived increase in media coverage immediately following the release before a rapid decline. Media coverage of this event focused primarily on the illegality of the incident with little expansion into broader debates on species reintroduction, ecosystem management or conservation policy. Notably, the incident was not referenced in the media coverage of a proposed legal lynx reintroduction in Northumberland several months later. Together, these findings suggest that while the illegal release briefly attracted attention, it was not capable of sustaining policy-relevant discourse nor was it a focusing event. The results suggest that, in this case, guerrilla rewilding generated temporary media interest and is unlikely to have lasting effects on future lynx reintroduction discussions or policy decisions.

1. Introduction

Conservation and ecological restoration are increasingly framed as essential responses to accelerating environmental change (IUCN, 1980). Within this context, reintroducing species lost through human activity is often justified on ethical as well as ecological grounds. Reintroductions are promoted for their potential to enhance biodiversity, restore ecosystem processes, contribute to cultural heritage and support the local economy (Chapagain and Poudyal, 2020; Hart, Haigh and Ciuti, 2023; Jhala et al., 2021; Sakurai et al., 2024). These benefits have led to increasing global pressure from environmental agencies, conservationists, policymakers and the public to pursue reintroductions. As a result, there have been a number of high-profile successes, including the reintroduction of American plains bison (*Bison bison*) to Yellowstone National Park in the United States and the reintroduction of Arabian Oryx (*Oryx leucoryx*) to the Dubai Desert Conservation Reserve in the United Arab Emirates (Simkins, 2008; Zimmerman et al., 2025). While such cases highlight conservation successes, they can obscure the social, ecological and political complexity inherent in reintroduction programmes with implications beyond the initial ecological objectives.

All reintroductions require extensive periods of planning and assessment, including determining habitat suitability, risk of disease and social impacts on surrounding communities in accordance with IUCN guidelines (IUCN, 2013). Proposed plans are then subject to scientific, legal and political scrutiny, often contributing to slow or contested decision-making. In response to the lack of pace or even denied permission, some individuals or groups have attempted to take matters into their own hands by carrying out unauthorised reintroductions, commonly referred to as guerrilla rewilding efforts (Thomas, 2022; Whitehead, 2025a). In the UK, such illegal reintroductions violate the Wildlife and Countryside Act 1981, under which licences are required for reintroductions (Glentworth et al., 2025). As illegal releases bypass all formal risk assessments, they can compromise the safety of both the released animals and the surrounding human communities (Forbes, 2025; Glentworth et al., 2025; Whitehead, 2025a). Conversely, some advocates argue that illegal releases are justified as a means of overcoming perceived bureaucratic barriers and accelerating the restoration of historically extirpated species (Cox, 2025).

Stakeholder conflict is frequently cited as a major challenge to successful reintroductions where farmers, conservationists and policymakers may disagree about the risks or benefits of a species' return (Coz and Young, 2020; Marino et al., 2024). Illegal reintroductions can exacerbate these pre-existing social tensions by bypassing formal stakeholder engagement, thereby undermining trust and placing both ecological objectives and relationships between communities and conservation institutions at risk (Sutherland et al., 2025; Whitehead, 2025a). The dynamic between illegal releases and social tensions was evident following the illegal release of Eurasian Beavers (*Castor fibers*) to Tayside, where the absence of a regulatory framework contributed to prolonged social and political controversy (Cox, 2025). The extent to which tensions escalate, however, may depend on how illegal releases are publicly interpreted, with media framing playing a key role in shaping both public and governmental responses (Birkland and Schwaeble, 2019; McCombs, 2004 cited in Scheufele and Tewksbury, 2006).

Mass media plays a critical role in shaping public agendas, by determining which issues receive attention and how they are framed (McCombs and Shaw, 1972; Birkland and Schwaeble, 2019). Certain incidents, known as focusing events, are "sudden, rare and harmful events" that draw mass attention resulting in the potential to shape public opinion and agenda setting (Birkland, 1997 cited in Birkland and Schwaeble, 2019). Illegal reintroductions may function as such events when they generate sufficient media coverage, although their effects may be either supportive or detrimental to conservation objectives. Importantly, not all focusing events lead to policy change (Birkland and Schwaeble, 2019), where both the persistence of coverage and the framing adopted by media and policymakers are crucial in determining whether an issue leads to policy change (Birkland and Schwaeble, 2019; McCombs and Shaw, 1972). Media coverage can influence public perceptions of both the species and management options, thereby influencing the prospects of subsequent legal reintroductions.

However, the effect of media coverage on policy change is not determined by attention alone, as the temporal dynamics of reporting play a critical role in shaping the extent of the media's influence. For example, Jones (2001, cited in Birkland and Schwaeble, 2019) states that attention must be maintained over time in order to have an influence on policy. Whether such an event achieves sustained attention

may be contingent on how it was framed in the media (Scheufele and Tewksbury, 2006). If the event is framed as a novel or isolated incident, then media coverage, and therefore policy-related discourse may diminish after initial interest fades. In contrast, framing an event in relation to broader societal implications may generate spillover effects whereby coverage of interconnected themes increases as wider discussions take place. Wider discussions may prolong the incidence's relevance, thus increasing the likelihood of affecting policy. Media coverage can also both influence and be influenced by public perception, meaning that framing and attention given by the media can be shaped by public response (Happer and Philo, 2013). Therefore, if the public loses interest in an event, then media coverage and the chances of influencing policy may decrease. Similarly, uncertainty in an issue presented in the media can also lead to a loss of public interest (Happer and Philio, 2013) as people may experience fatigue and no longer want to engage with the issue. Therefore, whether an illegal reintroduction with traits of a focusing event influences policy is dependent on the way the event is framed in terms of its broader implications and if it is able to sustain media and public attention. However, public perception may already be influenced by past experiences, interests, opinions of others and social groups (Happer and Philo, 2013, Lute et al., 2014; Heeren et al., 2016)

Public attitudes towards species are not uniform across taxa, with Kansky, Kidd and Knight (2014) reporting that carnivores like grey wolves (*Canis lupus*) are less tolerated than primates. Large carnivores have negative connotations due to their common association with being a major threat to livestock and hence a risk to livelihoods. In the UK, the long absence of terrestrial apex predators has further shaped public perceptions, as people have lost much of their knowledge on how to coexist over generations (Whitehead and Hare, 2025b). Shifting baseline syndrome may reinforce this effect whereby people perceive contemporary ecological conditions as "normal" without recognising that these conditions may already be degraded due to lack of knowledge or awareness of past environmental states (Soga and Gaston, 2018). Together, these factors suggest that proposals to reintroduce large carnivores in the UK may encounter resistance from local communities. However, the extent to which such dynamics apply to apex predators that pose

minimal risks to humans remains unclear which highlights the need for empirical assessment rather than basing on assumptions.

In January 2025, four Eurasian lynx (*Lynx lynx,* hereafter lynx) were illegally reintroduced in Scotland, prompting condemnation by environmental agencies, conservationists and politicians. The strongest condemnation came from Scottish First Minister John Swinney who stated "[m]y government will not be reintroducing lynx" (Paterson, 2025). Lynx once inhabited much of Britain but centuries of hunting, habitat loss and lack of prey led to its extirpation (Hetherington, Lord and Jacobi, 2005). Lynx are keystone species that prefer to prey on roe deer (*Capreolus capreolus*) and therefore activists argue that their presence will help to manage overabundant roe deer populations that have limited woodland expansion (Hanson, 2025). Despite this, there has only been one proposed reintroduction submitted in the past decade which was rejected due to concerns over the lack of stakeholder engagement (Department for Environment, Food & Rural Affairs, 2018). Farmers are the main stakeholders opposed to a reintroduction due to the potential for sheep predation (Whitehead, 2025a).

In order to evaluate the potential impacts on future rewilding efforts, assessing media coverage of the incident is essential as media can influence public perception and therefore agenda setting (Birkland and Schwaeble, 2019). Thus, it is important to determine whether the media treated the release as a short-lived event that was just part of the newscycle or a major conservation event that continued to shape subsequent debates on lynx reintroductions. This study used Structural Topic Modelling to analyse British media coverage surrounding the illegal release to evaluate how the prevalence of the event changed over time and the potential implications of this on future legal reintroduction efforts.

2. Methods

2.1 Data Collection

A total of 267 print articles (documents) discussing lynx reintroduction to the UK were collected using the online platform LexusNexis (Lexis+®). Specifically, articles published between 17 March 2022 and 17 October 2025 were collected using the Boolean search term (lynx AND reintroduc! OR rewild! AND Britain OR UK OR "United Kingdom" OR Scotland OR Wales OR England AND NOT "Lynx Chorley") (Hare, 2022). The timeframe was chosen to ensure that data was collected before and after the illegal release that was first reported on 8 January 2025, so that a comparison of narratives could be made.
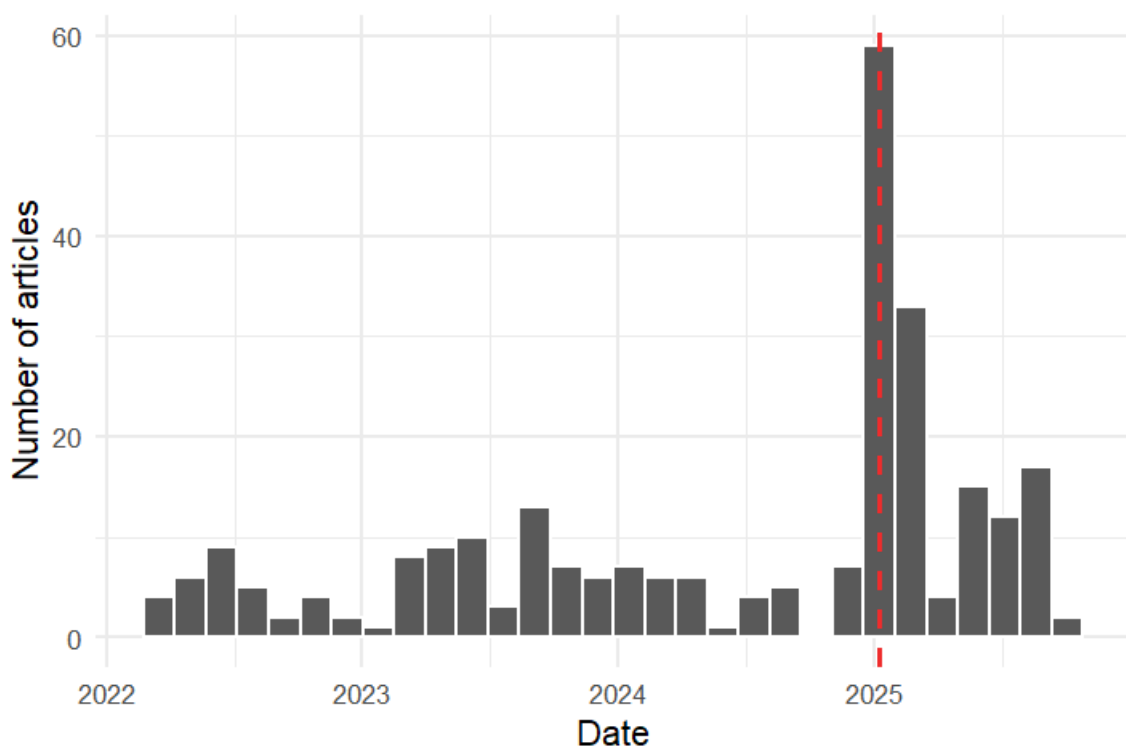

Figure 1. Distribution of articles collected between 17 March 2022 and 17 October 2025. The dashed line represents the date when the illegal release was first reported.

Each article was manually read as part of quality assurance to ensure relevance by filtering out articles that did not mention lynx reintroduction to the UK. For example, articles covering the *Lynx pardinus* (Iberian Lynx) reintroduction to Spain were not collected. For each relevant article identified, the contents of the article, date published, news source and news source's regionality (national or regional) were collected. Regionality was determined based on the publication's audience reach and distribution. For example, The Guardian was categorised as a national paper whereas the London Evening Standard was categorised as a regional paper (see Supplementary Materials for full list of newspapers). Importantly, all Scottish newspapers were categorised as regional as they have limited circulation elsewhere in the UK. When duplicate articles from the same news source with identical word counts were identified, one article was collected while the duplicates were manually excluded.

2.2 Data Preparation and Analysis

Data preparation and analysis were conducted in R version 4.5.1 (see Supplementary Materials for all session information). Before the Structural Topic Model (STM) could be implemented, the data was processed according to conventional advice (Roberts, Stewart and Tingley, 2019) e.g. extremely common/rare words were removed (see Supplementary Materials for full code). For rare words, a minimum article frequency threshold of 50 was used. The STM was fit under the Bayesian framework in which topic prevalence within articles and word distribution within topics were estimated. The number of topics (K) was determined by considering semantic coherence, held-out likelihood and residuals. To do so, STMs with 5 to 10 topics were fitted. A K value of 8 was chosen due to its relatively good balance of high held-out likelihood, high semantic coherence values and low residuals. A K value of 8 also showed a reasonable trade-off between exclusivity and semantic coherence. In sum, this process aimed to increase topic interpretability and distinctness while ensuring that the model would be able to predict the data well.

The topic prevalence component of the STM in this body of work took the form of:

$$\vec{\theta} \sim MVNorm(\vec{\mu}, \Sigma)$$

$$softmax(\vec{\mu}_i) = \vec{\beta}_0 + \vec{\beta}_1 \times Regional_i + f(days_i)$$

Where $\vec{\theta}$ is a vector of length K, which contains the proportion of article i taken up by a topic k. These topic proportions are drawn from a multivariate Normal distribution with topic prevalence for article i ($\vec{\mu}_i$) regressed on the $softmax$ link function and a topic specific intercept for national articles ($\vec{\beta}_0$). $\vec{\beta}_1$ is a vector of contrast treatments for regional newspapers for each topic, and $f(days_i)$ is a B-spline with five degrees of freedom for each topic. Five degrees of freedom for the B-splines was chosen as this allowed for prevalence trends to have an appropriate amount of wiggliness without any obvious overfitting.

3. Results

3.1 Raw Data

Of the 267 articles collected, 73 articles were collected before the illegal release during which coverage fluctuated with a peak of 12 articles published between July and August 2023 (Figure 1). After the illegal release, there was a pronounced spike in the number of articles collected with a peak of 59 articles in the month following the release (Figure 1). However, by March 2025 the number of articles published drastically declined with a peak of 16 articles published in August 2025.

The top four news sources with the most articles collected from were all national papers (Figure 2A). The majority of articles were published by the Independent with 27 articles recorded (Figure 2A). There were a total of 33 news sources represented in the corpus, with 12 categorised as national and 21 categorised as regional. However, 45 more articles were published in national papers (Figure 2B).
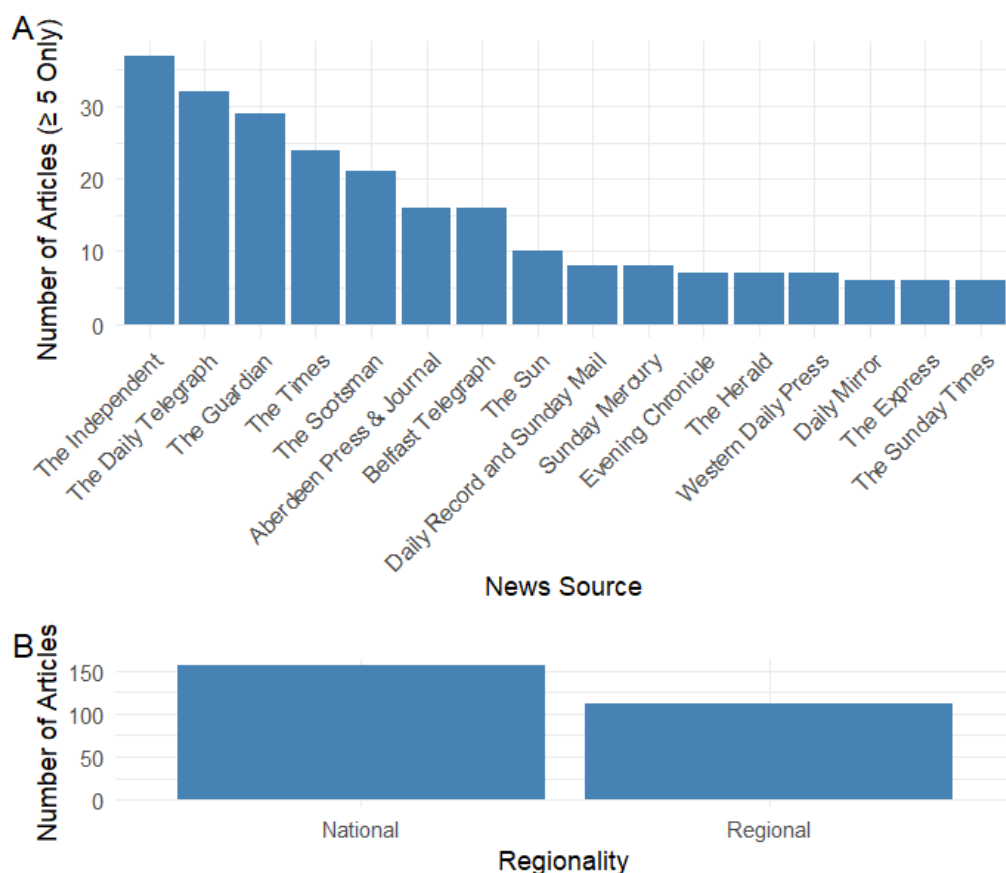
Figure 2. A. Number of articles collected from each news source. News sources with fewer than five articles were excluded for figure clarity (see Table S1 for all sources and the number of articles collected from each). **B. Number of articles collected from regional and national sources.**

3.2 Topics surrounding lynx reintroduction to the UK identified by the analysis

Eight topics were identified across the corpus and ranked in terms of prevalence where the meaning of each topic was determined using keywords (highest probability and FREX) and representative text for each topic (Table 1). Three of the eight topics specifically centre on the reintroduction of lynx to the UK (the story of the illegal release, the feasibility of a lynx reintroduction and the proposed reintroduction to Northumberland). The other five primarily focused on other aspects, such as expanding woodland habitats, but lynx were only briefly mentioned in context.

Table 1. Keywords and quotes representing each topic that were used for topic conceptualisation.

Topic title	Most frequent keywords (Highest Probablity)	Most frequent and distinctive keywords (FREX)	Representative quote	Description	Prevalence across corpus (%)
Illegal release	lynx, anim, said, scotland, cat	pair, cat, zoo, captur, highland	"The big cats were found in pairs near Kingussie"	Story of illegal lynx release into the Cairngorms	18
Bears/Wolves	say, year, one, bear, like	bear, say, bird, like, wolv	"Sweden is among a number of European countries that have stepped up hunting"	Controversy surrounding the hunting of wolves and bears in mainland Europe	17
Rewilding Britain	rewild, natur, beaver, speci, land	beaver, rewild, creat, natur, restor	"rewilding programme, called Transforming Nature's Recovery, is to help the UK fulfil its international obligation of protecting 30% of land for nature by 2030"	Rewilding Britain	15
Reintroduction	lynx, scotland, reintroduct, said, speci	predat, reintroduct, report, discuss, scotland	"assessing the feasibility of reintroducing the Eurasian lynx to the Scottish Highlands"	Discussion of a legal lynx reintroduction	14
Northumberland	lynx, project, said, trust, reintroduc	trust, project, woodland, miss, back	"Lynx could thrive if released in Northumberland"	Proposed release in Northumberland	11
Guerrilla rewilding	releas, illeg, said, anim, scotland	illeg, releas, author, scottish, act	"Scottish Government spokesperson said: "The illegal release of any animal poses a serious risk to their welfare, as well as impacting farmers, land owners, and surrounding communities"	Guerrilla rewilding in Scotland	11
Deer control	deer, wildcat, number, nativ, will	wildcat, deer, breed, nativ, number	"save dozens of pines throughout Glen Loyne in the northwest Highlands after they were identified to be at risk from overgrazing by excessive numbers of deer"	Deer population control for woodland expansion	7
Sheep farming	sheep, farmer, farm, food, land	sheep, farm, farmer, food, livestock	"former adviser for the Department for Environment, Food and Rural Affairs has sparked anger after saying sheep "have got to go" from the UK's hillsides"	Discussion of the sustainability of sheep farming in terms of conservation	7

Topics are in descending order of estimated prevalence from the STM.

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3.3 Results from the STM analysis

Regional and national coverage did not differ substantially for any of the eight topics, with no topic exceeding more than a 4% difference (Figure 3A). The greatest similarity in coverage was observed in deer population control and sheep farming, which represent the main proposed arguments for and against a lynx reintroduction (Figure 3A).

All topics showed variation in coverage over time however, there were drastic differences in coverage before and after the illegal release for five topics (Figure 3B). Most notably, there was a distinct spike of 34% in media attention of the illegal release that rapidly declined in the following months (Figure 3B). The same trend was seen in the coverage of the feasibility of a reintroduction and guerrilla rewilding discussions around the same time (Figure 3B). Several months after the illegal release, there was a rapid increase in media attention for the proposed release in Northumberland that peaked at 80% in October 2025.
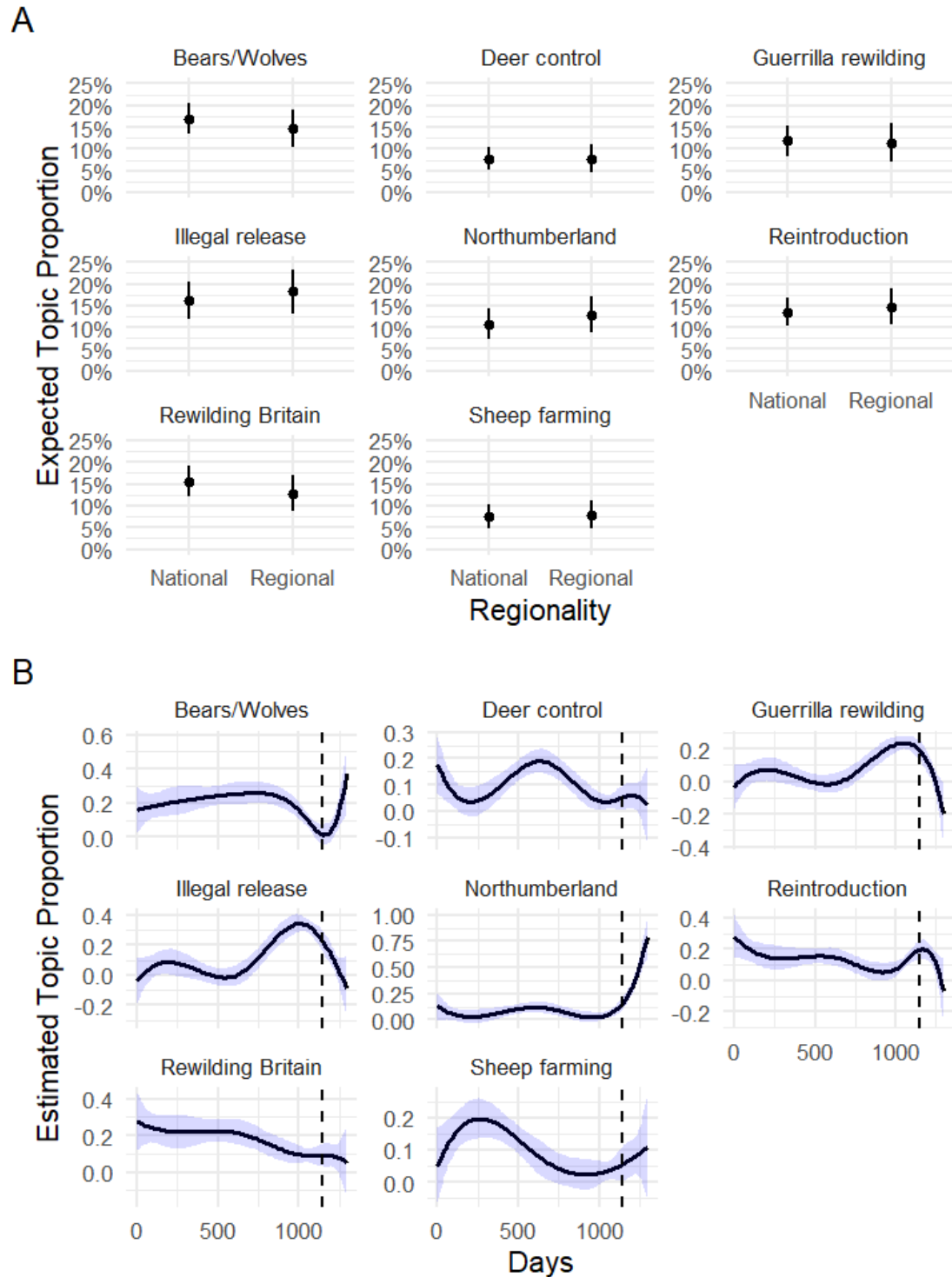
Figure 3. A. Comparing national and regional coverage for each topic. Average estimated topic proportion was used as a measure of coverage for comparison. **B. Temporal variation in topic prevalence.** Day 0 corresponds to 17 March 2022, the publication date of the first article collected. Ribbons indicate the 95% credible intervals.

4. Discussion

4.1 Main findings

The STM analysis examined UK newspaper coverage from March 17 2022 to October 17 2025 and eight prevalent topics were identified. The raw data showed a substantial spike in reporting of articles relating to lynx immediately after the illegal release (Figure 1), with coverage of the topic discussing the illegal release itself peaking at 34% at this time (Figure 3B). However, coverage dropped by 10% in the following three months and continued to decrease thereafter (Figure 3B). The rapid decline in illegal release coverage shows that there was a pronounced interest in the media, but this was short-lived. The closely related topic of guerrilla rewilding in Scotland followed the same pattern (Figure 3B). As the story of the illegal release faded over time, media attention shifted toward conversations about a proposed legal reintroduction in Northumberland. Interestingly, when reviewing articles related to the coverage of the Northumberland release, there was no mention of the illegal reintroduction which suggests that there were no lasting effects on discussions of a legitimate release. With regards to regional and national differences in topics, although I hypothesised that there would be more coverage of agricultural concerns from a reintroduction in regional news sources, the analysis found no meaningful difference between the two in any of the topics. Overall, the sharp decline in coverage of the illegal release following the initial peak indicates that, despite potentially acting as a focusing event, the illegal release failed to generate sustained media attention needed to influence policy within the timeframe of this study. Therefore, understanding why this attention declined so rapidly is crucial to understanding the implications of the illegal release for future reintroductions of lynx and other species.

4.2 Rapid decline in coverage of the illegal release

One explanation for the rapid decline is that the media framed the issue as an isolated incident rather than a catalyst for wider discussion of lynx reintroductions to the UK. Evidence for this interpretation comes from the minimal coverage on deer population control which increased by only 2% after the illegal release (Figure 3B), despite deer management being frequently proposed as a major reason for lynx reintroduction (Pearson and Carpenter, 2025). The lack of substantial coverage of

this topic during a time of heightened interest in lynx suggests that the media's narrative solely focused on the illegal release rather than expanding the discussion to the wider ecological implications of a lynx reintroduction. Furthermore, the lack of in-depth and sustained reporting may have contributed to the decline as repetitive exposure to an issue presented in the media is more likely to influence the public and public policy (Happer and Philo, 2013). While the media can shape public perception and therefore influence agenda setting, the relationship between the media and public perception may be bidirectional (Happer and Philo, 2013). A bidirectional relationship means that the decline in coverage of the illegal release could also be due to the public's influence on the media.

The rapid decline in media attention may be a reflection of the general public not perceiving the release as relevant to them, potentially due to shifting baseline syndrome (Whitehead and Hare, 2025b). Given that lynx have been absent from Britain for centuries (Hetherington, Lord and Jacobi, 2005), the general public may not fully understand the importance of their ecological role. Therefore, limited knowledge could lead to the perception that lynx are unnecessary to reintroduce to ecosystems that have persisted in their absence. Moreover, the general public may assume that lynx are very unlikely to be able to survive in modern Britain due to how much our landscape has changed over time (Hunter, 2015 and Smout, 2019 cited in Whitehead and Hare, 2025b). The coverage of the illegally released lynx may have indirectly emphasised their lack of essential survival skills by reporting that one had died and the remaining three were starving (Merritt, 2025). Such reporting may have reinforced public skepticism on the ability of lynx to survive in Britain and thus led to a lack of interest that was reflected in the media.

Furthermore, the British public's lack of knowledge and familiarity with lynx may also have had an influence. According to Happer and Philo (2013), when audiences have minimal prior knowledge or lived experience of an issue, initial attention can be high but without repeated exposure, it is unlikely that there will be sustained engagement (Happer and Philo, 2013). In the case of the illegal release, the initial curiosity surrounding the unexpected release was not supported by ongoing media coverage and thus led to a rapid fall in media interest. Additionally, Happer and Philo (2013) found that uncertainty around an issue can lead to the public losing interest. Balanced reporting of the potential advantages and disadvantages of a lynx

reintroduction could have left many feeling conflicted and together with their limited background knowledge, may have made it difficult for them to form an exact opinion and engage with the story (Cameron and Beattie, 2025). As a result, the lack of engagement was reflected in the decline in coverage of the illegal release. However, it is important to note that any interpretations of public perception drawn from this study are limited to those inferred from newspaper coverage. Increasingly, discussions take place through other forms of communication, such as social media platforms or community meetings, which my data did not capture. Therefore, conclusions regarding public interest and engagement reflect only what was visible in the press rather than the full range of public discourse surrounding the illegal release. Repeating this study using transcripts from video-sharing platforms such as YouTube and TikTok would allow for more direct observation of public opinion. Regardless, despite the decline in coverage of the illegal release, there was an increase in coverage surrounding a proposed legal release months later.

4.3 Future lynx reintroductions

The coverage of the proposed reintroduction of lynx to Kielder Forest, Northumberland rapidly increased months after the illegal release, reaching a peak of 80% coverage by the end of the study (Figure 3B). In contrast, coverage of the illegal release peaked at 34% before declining to 0% by the end of the study, though the number of articles differed dramatically (Figure 1). The illegal release was not mentioned in articles discussing the Northumberland reintroduction, which not only further supports the theory that the illegal release was regarded as an isolated incident, but shows that it did not impact legal reintroduction discussions in the media. The absence of policy change to ban reintroduction efforts, combined with ongoing discussions of a legitimate release, suggest that the likelihood of a future reintroduction did not change post-illegal release. The lack of impact is surprising given serious concerns raised by ecologists over the negative consequences on future legal reintroductions (Sutherland at al., 2025) in addition to the Scottish First Minister, John Swinney, stating that his "government will not be reintroducing lynx" (Paterson, 2025). Given that opposition to lynx reintroduction is most commonly rooted in concerns over livestock predation, the limited influence of the illegal release on broader debates raises questions about how such livelihood-related conflicts were reported.

4.4 Livelihood concerns reflected in the media

Human-wildlife conflict surrounding lynx centres around concerns of sheep predation. However, the results show that these fears were not strongly reflected in the media's response to the illegal release. Although concerns appeared in the coverage of the feasibility of a lynx reintroduction, coverage rapidly decreased at the same time coverage of the illegal release decreased (Figure 3B). These patterns suggest that livelihood concerns did not have sustained traction in the media narrative. In contrast, the topic relating to the sustainability of sheep farming showed a slight increase in prevalence over time (Figure 3B) after the illegal release. Coverage of this topic did not focus on the reintroduction of lynx but instead argued that the presence of sheep is hindering efforts to reintroduce native species and is contributing to carbon emissions (McHardy, 2023).

However, as this study was limited to articles available to LexisNexis, articles specifically from agriculture-focused sources such as Farmers Weekly and Farmers Guardian were not included (see Supplementary Material for full list of news sources). As a result, media coverage and specifically rural coverage may have been underrepresented in the analysis, and thus my data may lack perspectives related to livestock predation. Furthermore, in the case that public perception influences media, not only may farmers' perspectives have been under-sampled, but those who live in urban environments may have been overrepresented; by which I mean the opinions of those who are less likely to encounter lynx or be negatively affected by them. Despite this, the analysis found no substantial differences in national or regional coverage in all topics (Figure 3A), though this might not fully capture the urban versus rural divide, even though similar studies found such trends (Chandelier et al., 2018). Future research should include a wider range of news sources to address this limitation. Additionally, extending the timeframe of analysis could help to solidify current topics and also potentially identify a larger number of topics to better separate overlapping themes. For example, sheep predation was mentioned in both the coverage of the feasibility of a reintroduction and in the coverage of the sustainability of sheep farming. A better separation would ensure that any discourse is accurately represented and understood with regard to trends. It is also important to note that from a counterfactual perspective, it is not unreasonable to presume that media coverage would have been markedly different if certain aspects of the illegal

release had not played out as they had. For example, if sheep predation had occurred, media coverage may have been more negative, with heightened stakeholder conflict potentially threatening the likelihood of a future legitimate release. However, based on the way the event actually occurred, my study found little evidence to suggest that the illegal release hindered future legal reintroduction efforts and therefore the release was not a focusing event.

The illegal release of lynx into the Cairngorms generated intense but short-lived media attention. Coverage rapidly declined, and the incident was largely absent from reporting just months later, when a proposed legal reintroduction in Northumberland was being discussed. This indicates that the release failed to achieve sustained attention capable of influencing public perception and policy while also failing to act as a focusing event. Topics related to lynx reintroduction such as livestock predation and deer population control were only mentioned briefly, suggesting that the story of the illegal release was a story of interest rather than a story of a major conservation controversy. The overall findings of this study suggest that this instance of guerrilla rewilding did not cause lasting damage to conservation efforts.

5. Acknowledgements

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7. Acknowledgements

8. Supplementary Materials

8.1 Supplementary materials for the results section

Table S1. Number of articles collected from each news source.

Newspaper source	Region	Number of articles
The Independent	National	37
The Daily Telegraph	National	32
The Guardian	National	29
The Times	National	24
The Scotsman	Regional	21
Aberdeen Press & Journal	Regional	16
Belfast Telegraph	Regional	16
The Sun	National	10
Daily Record and Sunday Mail	Regional	8
Sunday Mercury	Regional	8
Evening Chronicle	Regional	7
The Herald	Regional	7
Western Daily Press	Regional	7
Daily Mirror	National	6
The Express	National	6
The Sunday Times	National	6
The Observer	National	3
The Northern Echo	Regional	3
Yorkshire Post	Regional	3
Daily Star	National	2
The Sunday Telegraph	National	2
Sunday Herald	Regional	2
The London Standard	Regional	2
The Daily Mail	National	1
Daily Post	Regional	1
East Anglian Daily Times	Regional	1
Evening Gazette	Regional	1
Evening Times	Regional	1
Leicester Mercury	Regional	1
Nottingham Post	Regional	1
Sunderland Echo	Regional	1
The Star	Regional	1
Western Telegraph	Regional	1

Table S2. Intercept values for each topic.

Topic title	Intercept
Illegal release	-0.03898
Bears/Wolves	0.15784
Rewilding Britain	0.2879
Reintroduction	0.28899
Northumberland	0.1342
Guerrilla rewilding	-0.03253
Deer control	0.15884
Sheep farming	0.042729

8.2 Code

```
# Load packages ------------------------------------------------------
```

```
library(lubridate)

library(stm)

library(tm)

library(wordcloud)

library(ggwordcloud)

library(dplyr)

library(stringr)

library(purrr)

library(tibble)

library(patchwork)

library(ggplot2)

theme_set(theme_minimal(base_size = 13))
```

```r
# Load data ---------------------------------------------------------

lynx <- read.csv("lynx_trial_2.csv",
          stringsAsFactors = FALSE,
          header = TRUE)


# Data processing ---------------------------------------------------

lynx$date <- dmy(lynx$date)
lynx$days <- as.numeric(lynx$date-min(lynx$date))
lynx$release <- ifelse(lynx$days < 1027,
          "Before",
          "After")



# EDA ---------------------------------------------------------------

p1 <- ggplot(lynx) +
  geom_histogram(aes(x = date), colour = "white") +
  geom_vline(xintercept = as.Date("2025-01-08"),
          colour = "firebrick2", linetype="dashed", size =1)+
  labs(x = "Date",y = "Number of articles")



p2 <- lynx %>%
  count(source) %>%
  filter(n >= 5) %>%
  arrange(desc(n)) %>%
  mutate(source = factor(source, levels = source)) %>%
```

```r
  ggplot(data = ., aes(x = source, y = n)) +

  geom_col(fill = "steelblue") +

  labs(

    x = "News Source",

    y = "Number of Articles (≥ 5 Only)"

  ) +

  theme_minimal() +

  theme(axis.text.x = element_text(angle = 45, hjust = 1))


p3 <- lynx %>%

  count(region) %>%

  ggplot(aes(x = region, y = n)) +

  geom_col(fill = "steelblue") +

  labs(

    x = "Regionality",

    y = "Number of Articles",

  ) +

  theme_minimal() +

  theme(legend.position = "none")
design<- "
A
A
B"
p2/p3+plot_annotation(tag_levels = "A")+ plot_layout (design=design)


# STM preparation ---------------------------------------------------------


lynx$documents_clean <- tolower(lynx$documents)

lynx$documents_clean <- gsub("'re\\b", " are", lynx$documents_clean)
```

```r
lynx$documents_clean <- gsub("'ll\\b", " will", lynx$documents_clean)

lynx$documents_clean <- gsub("'ve\\b", " have", lynx$documents_clean)

lynx$documents_clean <- gsub("n't\\b", " not", lynx$documents_clean)

lynx$documents_clean <- gsub("'s\\b", "", lynx$documents_clean)

processed <- textProcessor(lynx$documents, metadata = lynx)


# plotRemoved(processed$documents, lower.thresh = seq(1, 200, by = 5))


out <- prepDocuments(processed$documents, processed$vocab, processed$meta,
lower.thresh = 50)

docs <- out$documents

vocab <- out$vocab

meta <- out$meta


# Number of topics -------------------------------------------------


# res <- searchK(docs, vocab, K = c(5,6,7,8,9,10), data = meta)

# plot(res)


# Fitting STM w cov ------------------------------------------------


lynx_mod <- stm(documents = docs,

        vocab = vocab,

        K = 8,

        prevalence = ~ s(days, df = 5) + region,

        data = meta,

        init.type = "Spectral",

        verbose = TRUE)


plot(lynx_mod,type="summary")
```

```r
# Model inspection ---------------------------------------------------------


coh <- semanticCoherence(lynx_mod, docs)
exc <- exclusivity(lynx_mod)


coh_exc <- data.frame(Topic = 1:length(coh),
             Coherence = coh,
             Exclusivity = exc)


p4 <- ggplot(coh_exc, aes(x = Coherence, y = Exclusivity, label = Topic)) +
  geom_point() +
  geom_text(nudge_y = 0.05, size = 3, check_overlap = TRUE) +
  labs(x = "Semantic Coherence (closer to 0 is better)",
      y = "Exclusivity (higher is better)")


labelTopics(lynx_mod, n = 10)



# Topics -------------------------------------------------------------------



topic_props <- colMeans(lynx_mod$theta)
topic_sd <- apply(lynx_mod$theta, 2, sd)


topic_data <- data.frame(
  Topic = factor(1:length(topic_props)),
  Mean = topic_props,
  SD = topic_sd
)
```

```r
top_frex <- labelTopics(lynx_mod, n = 3)$frex
topic_labels <- apply(top_frex, 1, function(words) paste(words, collapse = ", "))


topic_data$Label <- paste0("T", topic_data$Topic, ": ", topic_labels)


p5 <- ggplot(topic_data, aes(x = Label, y = Mean)) +
  geom_errorbar(aes(ymin = Mean - SD, ymax = Mean + SD),
          width = 0.2, color = "black") +
  geom_point(colour = "#00A68A", size = 2) +
  labs(x = "Topic",
      y = "Expected %\nof Corpus") +
  scale_y_continuous(labels = scales::percent) +
  theme_minimal(base_size = 12) +
  theme(axis.text.x = element_text(angle = 60, hjust = 1))


# Word cloud ------------------------------------------------------


topic_id <- 8


top_words <- labelTopics(lynx_mod, n = 50)$frex[topic_id, ]


beta_matrix <- exp(lynx_mod$beta$logbeta[[1]])
word_probs <- beta_matrix[topic_id, ]


vocab <- lynx_mod$vocab
plot_data <- data.frame(
  word = vocab,
  prob = word_probs
) |>
```

```r
  filter(word %in% top_words)


p6 <- ggplot(plot_data, aes(label = word, size = prob)) +
  geom_text_wordcloud(area_corr = TRUE, color = "cornflowerblue") +
  scale_size_area(max_size = 50) +
  theme_minimal()
topic_id <- 2
findThoughts(lynx_mod,
        text = meta$documents,
        n = 5,
        topics = topic_id)



## Regionality --------------------------------------------------------

prep <- estimateEffect(1:8 ~ region,
              lynx_mod, meta = meta, uncertainty = "Global")


effect_data <- plot(prep, covariate = "region", method = "pointestimate",
              topics = 1:8, model = lynx_mod, print = FALSE)


uvals  <- effect_data$uvals
topics <- effect_data$topics
means  <- effect_data$means
cis    <- effect_data$cis

tidy_effect <- {
  if (is.matrix(means)) {
    purrr::map_dfr(seq_along(topics), \(j) {
      tibble::tibble(
```

```r
      topic = topics[j],

      level = uvals,

      est = means[, j],

      lo  = if (is.array(cis)) cis[, 1, j] else cis[[j]][, 1],

      hi  = if (is.array(cis)) cis[, 2, j] else cis[[j]][, 2]

      )

    })

  } else {

    purrr::map_dfr(seq_along(topics), \(j) {

      tibble::tibble(

        topic = topics[j],

        level = uvals,

        est = means[[j]],

        lo  = cis[[j]][1,],

        hi  = cis[[j]][2,]

        )

      })

  }

}


tidy_effect$topic_2 <- ifelse(tidy_effect$topic == "1", "Guerrilla rewilding",

                    ifelse(tidy_effect$topic == "2", "Bears/Wolves",

                        ifelse (tidy_effect$topic == "3", "Sheep farming",

                            ifelse(tidy_effect$topic == "4", "Rewilding Britain",

                                ifelse(tidy_effect$topic == "5", "Deer control",

                                    ifelse(tidy_effect$topic == "6",
"Northumberland",

                                        ifelse(tidy_effect$topic == "7", "Illegal
release", "Reintroduction")))))))


p7 <- ggplot(tidy_effect,
```

```
        aes(x = level, y = est, ymin = lo, ymax = hi)) +

    geom_pointrange(fatten = 2) +

    facet_wrap(~ topic_2,
            scales = "free_y") +

    labs(x = "Regionality",
        y = "Expected Topic Proportion")+

    scale_y_continuous(limits=c(0,0.25),
                labels = scales::percent)


## Temporal trends in topics -------------------------------------------


prep <- estimateEffect(1:8 ~ s(days, df = 5),
                lynx_mod, meta = meta, uncertainty = "Global")


plot_data <- map_dfr(1:lynx_mod$settings$dim$K, function(k) {
  out <- plot(prep, "days", method = "continuous", topics = k, print = FALSE)


  tibble(
    days = out$x,
    est = out$means[[1]],
    ci.lower = out$ci[[1]][1, ],
    ci.upper = out$ci[[1]][2, ],
    topic = paste0("T", k)
  )
})


plot_data$topic_2 <- ifelse(plot_data$topic == "T1", "Guerrilla rewilding",
                ifelse(plot_data$topic == "T2", "Bears/Wolves",
                    ifelse (plot_data$topic == "T3", "Sheep farming",
                        ifelse(plot_data$topic == "T4", "Rewilding Britain",
```

```
                                    ifelse(plot_data$topic == "T5", "Deer control",
                                        ifelse(plot_data$topic == "T6", "Northumberland",
                                            ifelse(plot_data$topic == "T7", "Illegal
release", "Reintroduction")))))))


p8 <- ggplot(plot_data, aes(x = days, y = est)) +
  geom_line(linewidth = 1, color = "black") +
  geom_ribbon(aes(ymin = ci.lower, ymax = ci.upper),
         alpha = 0.15, fill = "blue") +
  labs(
    x = "Days",
    y = "Estimated Topic Proportion"
  ) +
  facet_wrap(~ topic_2, scales = "free_y") +
  geom_vline(xintercept = 1048, linetype = "dashed") +
  theme(legend.position = "none")



# Exporting figures --------------------------------------------------

 ggsave("article_occurence.png",
     plot = p1,
      width = 8,
      height = 6,
      dpi = 300)


design<-"
BB
AA
"
```

```r
relationships <- p7 + p8 +
  plot_annotation(tag_levels = "A") +
  plot_layout(design = design)
relationships
 ggsave("relationships.png",
      plot = relationships,
      width = 8,
      height = 6,
      dpi = 300)
```

8.2 Session Information

```r
sessionInfo()
# R version 4.5.1 (2025-06-13 ucrt)
# Platform: x86_64-w64-mingw32/x64
# Running under: Windows 11 x64 (build 26100)


# Matrix products: default
# LAPACK version 3.12.1


# locale:
#   [1] LC_COLLATE=English_Antigua & Barbuda.utf8  LC_CTYPE=English_Antigua
& Barbuda.utf8
# [3] LC_MONETARY=English_Antigua & Barbuda.utf8 LC_NUMERIC=C
# [5] LC_TIME=English_Antigua & Barbuda.utf8


# time zone: Europe/London
# tzcode source: internal
```

```
# attached base packages:

#  [1] stats    graphics grDevices utils    datasets  methods   base


# other attached packages:

#  [1] patchwork_1.3.2   tibble_3.3.0     purrr_1.1.0      stringr_1.5.2

# [5] dplyr_1.1.4      ggwordcloud_0.6.2 ggplot2_4.0.0     wordcloud_2.6

# [9] RColorBrewer_1.1-3 tm_0.7-16       NLP_0.3-2         stm_1.3.8

# [13] lubridate_1.9.4


# loaded via a namespace (and not attached):

#  [1] Matrix_1.7-3     gtable_0.3.6     crayon_1.5.3     compiler_4.5.1
tidyselect_1.2.1

# [6] Rcpp_1.1.0       slam_0.1-55      xml2_1.4.0       parallel_4.5.1   splines_4.5.1

# [11] scales_1.4.0      png_0.1-8       lattice_0.22-7   R6_2.6.1         labeling_0.4.3

# [16] SnowballC_0.7.1   generics_0.1.4   pillar_1.11.1    rlang_1.1.6
stringi_1.8.7

# [21] S7_0.2.0         timechange_0.3.0 cli_3.6.5        withr_3.0.2      magrittr_2.0.4

# [26] grid_4.5.1       gridtext_0.1.5   lifecycle_1.0.4 vctrs_0.6.5       glue_1.8.0

# [31] data.table_1.17.8 farver_2.1.2     colorspace_2.1-2 matrixStats_1.5.0
tools_4.5.1

# [36] pkgconfig_2.0.3
```