

Trending discourses and silences around the role of women in wildfires: A systematic scoping review and some reflections from the field

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ABSTRACT

In mainstream social imaginaries, wildfires are still a ‘manly’ issue. Addressing the question ‘how are women depicted in the literature of wildfires?’ this paper systematically analyses current literature on this subject. We identify five roles of women in a sample of 81 papers, and we show that women’s roles are repeatedly structured as follows: women as impacted by wildfires, women as holders of particular knowledges and perceptions, women as firefighters, women as caregivers, and women as setters of fire. We supplement this analysis with our own observations from fieldwork in wildfires in Spain, Chile and Sweden. Our analysis of these roles allows us to depict a diversity of women’s capacities, vulnerabilities and contradictions beyond discourses around virtuosity or victimhood; to discuss how and why women’s various roles are unequally valued or avoided; and to consider the interconnection of gendered discourses on women and wildfires across geographies.

1. Introduction

In mainstream social imaginaries, wildfires are still a ‘manly’ issue (Eriksen, 2013; Tyler and Fairbrother, 2013). A perfect example of this is how the mainstream media reports on wildfires. As Olofsson et al. (2016) explain for the case of Sweden, news tend to disseminate stereotypical gender divisions, wherein women’s roles in the extinction, prevention and management of wildfires tend to be anecdotal. In the context of increasing climate disasters, and specifically wildfires (Coogan et al., 2019), this under-consideration of women’s labour renders them nearly invisible. It also provides a limited and caricaturised understanding of what wildfires are and what they imply for the public and local communities involved in and affected by them (González-Hidalgo, 2023).

The topic ‘Gender and forests’ has by now gained traction in forest-related institutions, such as the United Nations Food and Agriculture Organisation (FAO), which has (finally) acknowledged that ‘women are critical to ensuring the future sustainability of forests and forestry’.¹

However, while fires are key social and ecological processes in forest ecosystems, ‘gender and wildfires’ remains an under-explored topic in these international forestry forums. For example, there is no mention of wildfires in any of the 12 publications on FAO’s webpage on gender and forestry (ibid). Nevertheless, we have observed that if and when forestry institutions engage with this topic, they either pose the problem as a lack of equal opportunities for women in fire brigades² or focus narrowly on the role of women in fire prevention.³ While these two aspects do deserve further attention, our paper is motivated by how this observation differs from our everyday experiences of researching and working with local communities exposed to wildfires, where we have seen women engaged in far more diverse roles. We, for example, thought of Alma,⁴ a retired woman we interviewed some years ago, who assisted her neighbours and the fire brigades day and night during the intense wildfires in Sweden in 2018 (see González-Hidalgo, 2023). We also thought of Dolores, a woman who was charged for setting fires to tree plantations in rural Spain as an act of resistance towards imposed forest developments since the 1940s (see Cabana Iglesia, 2007). In our initial

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¹ <http://www.fao.org/forestry/gender/en/>. Accessed October 2023.

² See for example this post by the European Forest Institute: <https://resilience-blog.com/2018/08/27/the-fourth-wave-of-feminism-women-and-fire>. Accessed October 2023.

³ See for example this news published at FAO page: <https://www.fao.org/in-action/eu-fao-flegt-programme/news-events/news-details/en/c/1439488/>. Accessed October 2023.

⁴ All the names used in the text are pseudonyms.

examination of the aforementioned documents, we were unable to discern the roles of Alma and Dolores. Their contributions to the biophysical and emotional aspects of daily fire management and emergency response, as well as their involvement in the ignition of fires for socio-ecological or political purposes, were not evident. This observation prompted us to conduct a literature review to ascertain which roles of women were more or less discussed in the academic literature on wildfires.

As it is the case for many other processes of environmental change, conflict and disasters, critical scholars of wildfires have endeavoured, especially over the past 15–20 years, to unpack taken-for-granted assumptions around who wins and who losses – and how, why, and what – in wildfires. Wildfires – including wildland fires, forest fires, and/or any unplanned, uncontrolled and unpredictable fire of vegetation – are one of the socio-ecological processes most influenced by current dynamics of global environmental change (Krawchuk et al., 2009). Evidence of this is that extreme wildfire events of unprecedented size and intensity are occurring around the globe almost yearly, severely impacting local populations, firefighter crews, and social and natural ecosystems (Tedim et al., 2019). From a critical perspective, wildfires as disasters are analysed according to their systemic structural aspects, as opposed to the purely technical, recognising that the technical may in fact be the outcome of deeper structural causes (Oliveira et al., 2020). This critical understanding of wildfires can elucidate how the control of fire regimes has been at the centre of land struggles, where setting fires to large extensions of land has been historically a tool of power for colonisation, land control and grabbing (see Pyne, 2012). But, when particular knowledges and practices around fire are utilised by disempowered communities – indigenous, peasant, impoverished – these communities tend to be further marginalised, criminalised or persecuted (see Ulloa and Barton, 2024; Eriksen and Gill, 2010).

Nowadays, an increasing number of communities across geographies are facing risks, experiencing direct impacts, or recovering from devastating wildfires. Several scholars have already shown and discussed how the impacts of these disasters are experienced differently across historical and structural inequalities. Notable work includes that of Christine Eriksen, who has critically shown that wildfires are not a gender-neutral phenomenon, since gender roles tend to be maintained during the management of the emergency (see Eriksen et al., 2010; Eriksen, 2013, 2014). Also, Heidi M. Walker et al.'s recent calls for an intersectional perspective on wildfires (2020, 2021) have helped reveal the various systems of power that shape how communities experience, respond to, and plan for climate hazards. These works set the basic epistemological and ontological grounds of our work, because they show how in urban, peri-urban and rural communities – which tend to be considered homogeneous in terms of environmental disasters – power relations, mediated by uneven geographies of gender, race, ethnicity, class, location, and age, in fact influence uneven context-specific experiences of these disasters (see also Hoffman et al., 2021).

Having being involved in transnational research projects focused on how local communities in Europe and Latin America make sense of wildfires, we have repeatedly seen how the voices and experiences of women – whether poor or rich, and regardless of their ethnicity – tend to be, across differences, absent, rare, disadvantaged and/or caricaturised during and after wildfires. While this has been widely discussed in the literature, a systematic assessment of the discourses and roles of women in wildfires is still lacking. Thus, the goal of this article is to provide an overview, through a systematic scoping review, of the existing anglophone scientific literature focusing on wildfires and gender, with a particular focus on the role of women.

The paper is structured as follows. Section 2 briefly introduces the gendered character of wildfires, and motivates our aim to scrutinise and make visible the diversity of women's capacities, vulnerabilities and contradictions in such contexts. Section 3 describes how we organise our systematic scoping literature review, engaging with the question, 'How are women depicted in the literature of wildfires?' This section also

explains why we decide to supplement our analysis with some empirical vignettes from our fieldwork in Spain, Chile and Sweden. Section 4 explains the five roles we identified in the reviewed literature: women as impacted by wildfires, women as firefighters, women as holders of particular knowledge and perceptions, women as caregivers and women as fire setters. Section 5 discusses how an analysis of these roles helps us identify, transform, interconnect and discuss taken-for-granted assumptions about women, forests, and wildfires in the context of increased climate disasters. Section 6 outlines our conclusions.

2. Gendered wildfires

Feminist theory has extensively discussed and nuanced the complex interlinkages between gender inequality and environmental change (see Rocheleau et al., 1996; Elmhirst, 2011; Hartter et al., 2015) with respect to how women's socially constructed roles and designation in certain types of nature, labouring tasks and decision-making spheres have historically resulted in their differential access to, or control over, land and ecological systems more broadly. In regards to environmental change and disasters, critical feminist scholars have noted how environmental change and disasters are usually analysed according to Western conceptions which devalue 'what is (culturally) associated with women and nature, emotion, animals, the body, while simultaneously privileging those things associated with men, reason, culture, humanity, and the mind' (Gaard, 1993:5). This literature has scrutinised gender relations in specific environmental contexts and how discursive and cultural constructions of hegemonic masculinities and femininities shape the way we interpret, debate, articulate and respond to environmental change (MacGregor, 2009, 2017); and, also, how these provide opportunities for both the reproduction as well as the transformation of such vulnerabilities (Tschakert and Tuana, 2013). Key in this approach is the -increasingly applied-intersectional lens which helps to unpack how structures of power across social differences like class, ethnicity, gender, etc., emerge and interact- but are also challenged and negotiated in the context of environmental change (Kaijser and Kronsell, 2013). This work has helped transcend simplification, going beyond man-woman binaries to discuss the everyday making of gender relations in the context of environmental change, as socially constructed and context-specific.

Wildfires are not gender-neutral phenomena since gender roles tend to be maintained and reinvigorated during the management of an emergency, both for affected communities as in the case of fire-fighting brigades (Hoffman et al., 2021; Eriksen, 2013; Pacholok, 2013). Also, the unequal distribution of the impacts of wildfires tends to correlate with the structurally unequal conditions of marginalised communities affected by fires, as Davies et al. (2018) discuss in the case of migrant and racialised communities and Mihalus et al. (2023) discuss in the case of indigenous peoples. This unequal distribution of vulnerabilities due to wildfires cannot be explained through an essentialisation of such identities; on the contrary, diverse experiences of (gendered, race-based, classed, etc.) vulnerability are produced through the operation of power in ways that depend on social-geographical context and intersecting aspects of identity (Kaijser and Kronsell, 2013).

Critical scholars, those addressing broader questions around environmental change and conflict, as well as those specifically analysing disasters such as wildfires have extensively argued that a gendered perspective to environmental issues is not (only) "about women" (Nightingale, 2006; Fletcher, 2018). Indeed, what we need is to understand the everyday cultural functioning of gender relations as uneven intersectional relations. Nevertheless, the specific analysis of the discursive representation of women – in academic literature, in policy documents, in the mass media – can provide key insights into particular trends and silences around gender and wildfires, and more broadly, about gender and disasters and human-environment interactions. This has been shown by previous studies which have analysed how women tend to be represented as either virtuous environmental heroes or vulnerable victims of environmental crisis and conflict (Arora-Jonsson,

2011), making them disproportionately responsible for environmental protection through their social reproduction roles (see MacGregor, 2009, 2017) or resistance practices (Nightingale, 2006). Also, more specifically in the literature of wildfires, this has been done when analysing, for example, the specific everyday strategies which female fire-fighters use to survive and resist in such a patriarchal setting (Eriksen, 2019).

As noted in the introduction, despite growing academic research and knowledge around the gendered aspects of wildfires, the conceptualisations of women in forest policy documents and institutions are yet superficial, in that they do not capture the diversity and complexity of women's performances in wildfires. This study sheds light on this topic by analysing leading studies and suggesting possible future research directions. Our goal is to make visible the diversity of women's roles in wildfires and to discuss why certain roles receive more attention, while others are silenced. Our aim is to advance the de-essentialisation of the discourses on women in climate-change disasters, and particularly wildfires.

It is important to note, as we explain below, that our review of the literature considers works that have a relational understanding of gender (and therefore discuss gendered relations in, for example, fire-fighting brigades, evacuation plans or post-fire recovery) and also articles that refer to biological sex and that discuss (for example) the unequal impacts of wildfires on (male and) female bodies. We consider that this diversity of conceptualisations of women (sex and gender, inherent and conditional) within the literature helps reveal the intertwined diversity of embodied experiences of wildfires (Tschakert, 2012). Our

explanation of the roles we found, in the works we analysed and in our selected vignettes, will show precisely how the category of 'women' is not an undifferentiated or ontological category, since not all women have the same kind of connections (colonial, class, etc.) to power and responsibilities, sympathies and understandings of wildfires.

3. Methods: literature review and empirical vignettes

Our systematic scoping review was initiated to locate articles, written in English and published in peer-reviewed journals, that addressed the role of women in forest fires. To conduct this review, we set our research question, which informed the inclusion criteria of our search string, before conducting searches of three databases (Web of Science Core Collection, Web of Science CABI and Scopus), screening retrieved publications for relevance and analysing the final set of publications (Fig. 1).

In looking for publications to review, we chose three broad search terms to be present in either keywords, titles or abstracts: wildfire, forests and women (see Table 1 for the specific terms used in each query). We decided not to include grey literature since our aim was to analyse the state of academic knowledge and identify main trends in it. We recognise the limitation of choosing only English peer-reviewed literature.

After deduplication, we had a final list of 342 records. We screened these publications based on our inclusion criteria.

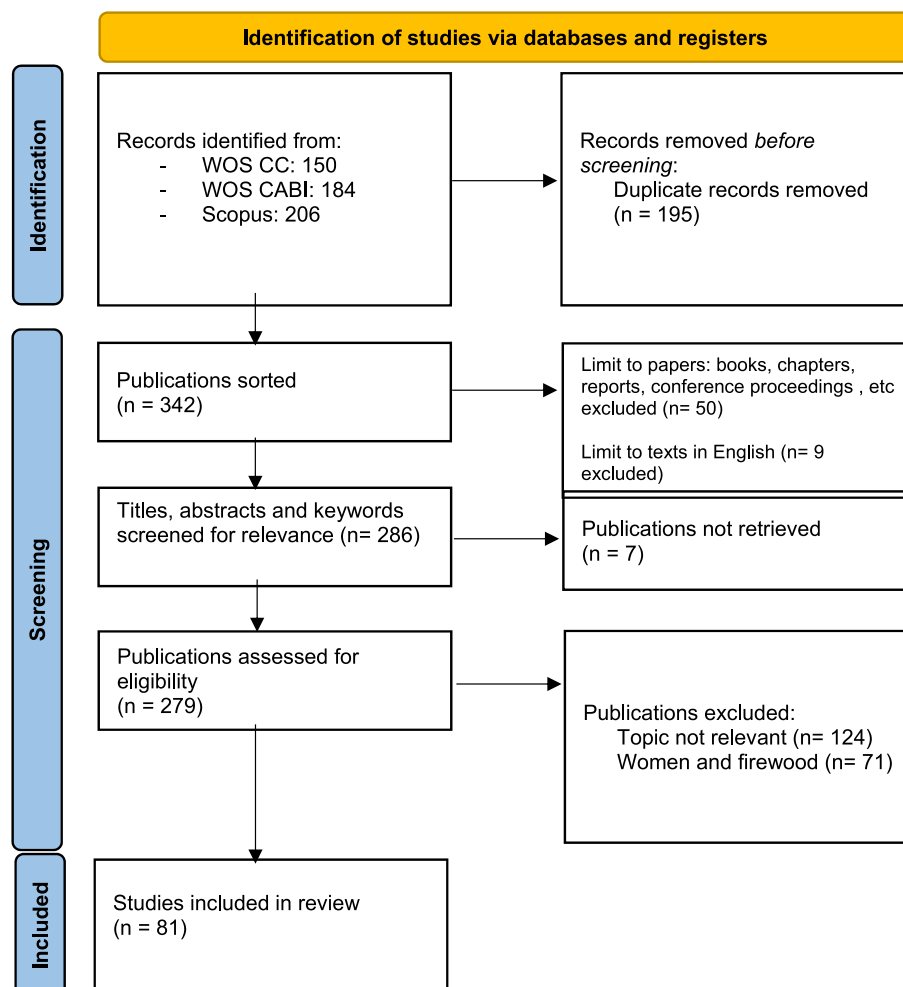


Fig. 1. Systematic scoping overview.

Table 1
Search criteria and results in the three data bases. Last update of search: September 2024.

	Query ^a	Number of hits
WOS CC	TS=((wildfire* OR fire* OR burn*) NEAR/5 (forest* OR tree* OR wildland*) AND (gender OR woman OR women OR feminist* OR intersectional*)))	150
WOS CABI	TS=((wildfire* OR fire* OR burn*) NEAR/5 (forest* OR tree* OR wildland*) AND (gender OR woman OR women OR feminist* OR intersectional*)))	184
SCOPUS	TITLE-ABS-KEY ((wildfire* OR fire* OR burn*) W/5 (forest* OR tree* OR wildland*) AND (gender OR woman OR women OR feminist* OR intersectional*))	206

^a The reason to use "NEAR" and "W/5" is to connect terms more tightly together than with "AND". We defined the search likewise since we were looking for wildfires (that is forest/tree/woodland/bush fires) and not fires in general. We are aware that if we change "NEAR/5" and "W5" for "AND", many more publications appear that could be relevant to this literature review. A more comprehensive analysis of the literature can be undertaken in future research.

- Publications had to focus on events of wildfires, this means that those papers which mentioned fire as related to other linguistic uses (poetry, name of products, etc.) were not included. We also excluded those that mentioned wildfires as one of the outcomes of climate change, for example, but without an in-depth analysis of the wildfires per se. We categorised these as "topic not relevant" in Fig. 1.
- Several publications on our list referred to 'women and firewood', especially in South Asian and African contexts, but there was no mention of a wildfire event. Therefore, according to the previous inclusion/exclusion criteria, these publications were excluded (see Fig. 1). While we could have decided to specify in our search that we did not want this literature included, it was meaningful for us to manually exclude these papers since it made us realise how, while this may reflect the geographical and cultural particularities of those contexts – with less incidence of wildfires and greater presence of people in forests – it also shows how visible in the literature is the role of women in collecting firewood and setting cooking fires as part of biodiverse forests, which provide local communities (and women) resources for everyday life. While these fire-related activities are seen, unproblematically, as feminized, when these are transformed into wildfire management and reduction of risk, women tend to be left out of the picture.
- Publications had to present some data around women and wildfires, or discuss gender roles in wildfires. This means that those publications that mentioned "gender OR woman OR women OR feminist* OR intersectional*" without any particular analysis or information on the role of women in wildfires were also not considered. We also tagged these as "topic not relevant (Fig. 1).

Our final set of articles summed a total of 81. We read them completely and generated codes and themes to describe what actions, roles and traits were mentioned. We identified five major roles of women in wildfires in the literature reviewed: (1) Women as impacted by wildfires, as part of local communities; (2) Women as fire-fighters, as those women who participate of fire-fighting brigades; (3) Women as holders of particular perceptions and knowledge during, previous or after a wildfire; (4) Women as caregivers during the wildfire emergencies, and (5) women as setters of fires. The definition of these roles does not mean that reviewed works would be allocated to only one role, since several of them mentioned several roles. See Appendix A for a complete list of the 81 papers considered for this review, and our allocation of role categories to each of them.

3.1. Interconnected geographies: Women's roles in wildfires in Chile, Spain and Sweden

The following pages complement our literature review with vignettes garnered from our research in uneven spaces dominated historically by wildfires and forest extractivism, as well as social, ecological and cultural dynamics associated with environmental change. As noted in the introduction, our motivation for this article arose while thinking about some of the women we have met after wildfires. While we were identifying the roles through our literature review, it was unavoidable for us to connect these with our ethnographic fieldwork data, which brought these roles to life. We therefore decided to select from our ethnographic fieldwork data set one short vignette for each role. We looked for a good example to include that would best illustrate or expand upon the traits or roles we found in the literature. The use of these multiple sources of data – literature review and empirical observations – facilitated for us a more comprehensive understanding of the topic, and helped us ground the academic review in the women's voices we have heard over the past few years, confirming trending discourses as well as silences in it.

Our vignettes come from the three territories where we have worked as engaged scholars over the past 10–15 years: the Mapuche, indigenous territory in Southern Chile; rural areas of Galicia in northwest Spain; and rural, forested areas in central Sweden. These three contexts provided rich examples that allowed us to analyse the agency of and impacts upon local communities. As discussed further below, our examples help illustrate more fully the everyday dynamics of the noted roles and elucidate the evident and crucial presence – albeit sometimes their erasure or caricaturisation by mainstream narratives – of women engaged in a diversity of roles, knowledge, nuance and ambivalence in times of increasing climate disasters. By offering examples from across the globe, our goal is not to compare women's experiences in different cultural, political and geographic contexts, but rather to discuss the hegemonic discourses around women and wildfires that transcend context particularities, while also showing how power and agency operate in complex, place-specific and sometimes contradictory ways to affect the lived experiences of those going through such disasters.

In spite of broad cultural, political and economic differences, these three territories share certain characteristics, including local, rural dynamics dominated by the expansion and consolidation of a forest industry, with implications related to environmental and colonial injustice, as well as the occurrence of wildfires. In all three cases, the existence of a robust forestry industry, with public and private sector support, has had an impact on local historical practices concerning forested areas, including the use of fire as an agro-silvo-pastoral tool. In all three cases, we have been engaged with local communities who had to be evacuated due to wildfires, and we have participated during and after wildfires in bottom-up, activist initiatives which sought to pursue local alternatives (Cabana Iglesia, 2007, 2023; Cidrás and González-Hidalgo, 2022; González-Hidalgo, 2023).

4. The role of women in wildfires: mapping themes and silences

4.1. Women impacted by wildfires

During our literature review, we found that the most discussed role of women in wildfires is the fact that women are unequally impacted by wildfires, especially with regards to their physical health (25 out of 31 records) but also in terms of the unequal impacts on their emotional health, economy, livelihoods and more. Generally speaking, these papers refer to women as part of local communities exposed to wildfires, although of course other roles of women are also unequally impacted by wildfires (for example as firefighters, see section 4.3).

In this category, several works address the unequal health effects of air and water pollution on women (Kunii et al., 2002); some of these are to be expected, such as those related to pregnancy (see the review by Foo et al, 2024), others are less obvious, such as increased chances of

suffering from asthma or other respiratory conditions during fires (Liu et al., 2017; Cascio, 2018; Reid et al., 2016). While Dennekamp et al. (2015) observed greater increases of heart attacks for men during the fire season, there was no significant association between the rate of cardiac arrest and air pollutants among women. Sahani et al. (2014) also note that the timing of the effects of fire is mediated by gender: the immediate effects of a wildfire in Malaysia were seen particularly among males, whereas child and adult-female mortalities were associated with delayed effects. Dealing with the unequal physical impacts of wildfires, Haynes et al., 2010, with respect to a case in Australia, analysed how “while men have been most often killed outside while attempting to protect assets, most female and child fatalities occurred while sheltering in the house or attempting to flee” (page 185).

This literature also discusses the unequal emotional and mental health impacts associated with wildfires: Referencing a forest fire in Israel, Shavit et al. (Shavit et al., 2013) note that women had higher fear levels than men, while anger levels were no different. These unequal, emotional gendered impacts of wildfires can increase due to overlapping power oppressions; Walker et al. (2021) note, for example, regarding their study in Canada, “how Indigenous women with children experienced specific stressors in urban evacuation communities compared to their non-Indigenous counterparts, such as the fear of investigation or even apprehension of children by Social Services” (page 177); and Rees and Wells (2020) discuss how women in Australia were unevenly impacted by wildfires and COVID, because spending more time at home made them more vulnerable to domestic violence (sic.). Also, discussing broader gendered impacts of wildfires in Indonesia, Marlina et al. (2021) analyse how peatland fires unequally impact women since the majority of men will migrate in search of new sources of livelihood.

During our discussions about this role, we recalled several accounts of testimonies relating to the suffering caused by wildfires. We decided to share here an extract of a media interview with Mari Carmen, a woman evacuated from a wildfire in San Cristovo de Monterrei, Ourense, Galicia, Spain, in 2021. Her words echo media accounts that frequently appeared during the hot summers of southern Europe. In the video interview,⁵ Mari Carmen appears wearing a mask, along with her son. She bemoans the fact that it is the neighbours who know how local fires develop and who controls them, but that firefighters and local authorities do not listen to them, neglecting the knowledge of rural people. She says she feared for her life and her family's, and for her house – ‘that everything can burn down in two minutes’. She ends up in tears, saying, ‘there's a lot of impotence, a lot of rage... it's very sad that we do not fight for what we have on this earth.’

4.2. Women as holders of particular perceptions and knowledges

The articles to which we assigned this label are those that mention or discuss, in more or less detail, how women, for whatever reason, have particular or different perceptions or opinions (than men) in relation to wildfires, be it in relation to fire management, prevention or other aspects of fires. We have also categorised here articles that mention women's particular kinds of knowledge during pre-, ongoing and post-fire scenarios under this theme; that is, the literature that elaborates the local, socio-ecological knowledge that women have in relation to wildfire prevention and management. This specific literature typically focusses on women as forest owners or as members of communities exposed to fire, and therefore we do not tag in this section the kinds of knowledge that are present in the other roles around fire dynamics and extinction, social and care work and resistance. Our decision to bring these two themes – perception and knowledge – together in this category

responds to the idea of the interconnectedness of particular perceptions and knowledge, although of course this and other roles (especially that of being ‘impacted’) are obviously also related.

Many of the articles that mention the different perceptions of women, compared to those of men, do so by discussing whether, when, why or to what extent it is true that women show a preference for evacuation during fires, in case studies conducted mostly in the US and Australia (see Forrister et al., 2024; Whittaker et al., 2016; Adedokun et al., 2024). Probably related to this, several other papers discuss how women, in contrast to men, tend to have higher risk perceptions in the bushfire scenario and therefore lower coping appraisals. This tendency for men to have lower risk perceptions has been discussed not only in the context of wildfires but more generally in disaster studies (as discussed in several papers, see Papagiannaki et al., 2019). In critical disaster studies, these differences around risk perception have been discussed socio-politically, showing that privileged groups – in particular, wealthy, white men – are much more likely to have low risk perceptions. According to Söküt Açar et al.'s research in Turkey (Söküt Açar et al., 2019), these unequal perceptions of fire risk are evident at early ages, since risk perception was significantly higher for school-age girls than for their male classmates. This particular form of risk and vulnerability perception, which can be explained by the patriarchal structures that shape bushfire education, has implications for the difficulty of engaging women in bushfire risk management, as discussed by Eriksen (2014). Also noteworthy in this category are studies examining the divergent views of forest owners and neighbouring communities on prescribed burning as a form of wildfire prevention: women tend to report more resistance to the controlled use of fire to mitigate risks, in case studies done in the United States and New Zealand (see Hoffman et al., 2021; Bayne et al., 2019). Other studies in this category discuss, for example, how the perception of burnt landscapes is more negative in women than in men, as Paraskevopoulou et al. (2019) determined in a case study in Greece; and also, how women tend to have a poorer perception of their own forest knowledge, which affects their own perceptions of forest conditions and wildfire risk. Referencing a case study in Portugal, Oliveira et al. (Oliveira et al., 2020) suggest this may relate to the social roles attributed to women, particularly with respect to older age groups, ‘which have made women less active... even if their risk perception is high’ (p. 9). Eriksen (2014) suggests that strengthening community networks, such as those in schools, kindergartens, nursing homes or health services, can be a vehicle for encouraging women to take ownership of their knowledge, since they allow women to share information with others in ‘safe’ everyday environments.

On the other hand, we include in this category papers that mention or discuss how women's specific knowledge and practices are relevant to forest fire prevention. In contrast to the aforementioned papers on perception, which tended to be more focused on the Global North, in our study, under this category, the literature is geographically more diverse, including more cases from the Global South that discuss, for example, women's creation of traditional firebreaks in Ghana (Yahaya et al., 2023), their collection of non-timber forest products in India (Cauhan, 2021), pruning tasks in Mexico (Pineda-López et al., 2015), or women's knowledge of more or less fire-resistant species in Spain and Sweden (González-Hidalgo, 2023). In this sense, although it is often assumed that women tend to participate less than men in forest restoration activities, these works reveal the fundamental roles of women in terms of forest management and their key role regarding fire prevention. For example, Elbaar and Meilantina (2020) detail the roles women play directly or indirectly in the prevention of wildfires in Indonesia. They show how women help prevent fires through controlled burning, verifying that fires are extinguished before families leave, as well as tracking and evaluating the actions of other family and community members in relation to forests, and reminding others to be alert when carrying out work that involves setting fires. Along similar lines, Pineda-López et al. (2015) emphasize that certain historically feminized tasks, such as pruning in the Mexican forests, positively impact fire prevention.

⁵ Posted on Youtube by the Diario do Tâmega, see <https://www.youtube.com/watch?v=QilXukjTdNs&feature=youtu.be&fbclid=IwAR2wlpjsqSFduYJzp2mTBcMvkCZL1gnI8QPMaDDrtaJ0-elCwUrFF7HM>. Accessed October 2023.

Nonetheless, as Pokharel and Suvedi (2007) observe in the case of Nepal, many women tend to perceive themselves as having limited knowledge of fire dynamics and strategies, both prior to and during and following an emergency scenario.

These articles contradict the idea that women are only passive agents in relation to wildfires, or "the helpless other" (Vinyeta and Bacon, 2024) with no knowledge or involvement in forestry activities, or "only" caregivers during wildfires (see Eriksen et al., 2010; and the label 'women as caregivers').

During our walks across burnt landscapes in Europe and Latin America, we heard women offer very specific knowledge regarding the behaviour of fires and of various tree and bush species – e.g. how eucalyptus and pine burn in contrast to birches or chestnut – and when and from where wildfires could be stopped during an emergency related to a particular territory's slopes and other characteristics, as well as which shrubby or arboreal species would best restore an affected area. To illustrate this role, we offer the story of Susanna,⁶ a mestizo woman who worked for a subcontractor of the forestry enterprise Arauco, a large owner of tree plantations in Latin America. Susanna works in 'community relations'. As we observed in our analysis of the forest-extractivist sector in southern Chile, white men were typically in charge of highly technical labour tasks, related to planning and management of the tree plantations, while indigenous or mestizo men did the less qualified and heavy labour in the fields. Frequently, both at private and public forestry institutions, some indigenous or mestizo women were in charge of environmental education and community relationships, where they are seen as strategic actors disseminating particular knowledge about forest fires in order to guarantee that the resource to be extracted is not endangered. Susanna informs local communities about the impacts of wildfires, the 'benefits' of the tree planting economy, and the importance of participatory sustainability in the area. In so doing, Susanna and others like her are mobilizing and expressing their particular knowledge on the topic, even if co-opted for the sake of capital accumulation.

4.3. Women as firefighters

One role which is increasingly under discussion, mainly with evidence from cases from the Global North (all the 14 tagged papers), is the role of women in fire brigades. Worldwide, because firefighting is historically a predominantly male profession, it is rare that women are 'official firefighters'. Since the 1970s, women have made inroads into professional and volunteer fire departments in multiple countries, and they nowadays work in a variety of fire-service roles, including as fire chiefs. Nonetheless, they make up less than 20 percent of firefighters even in countries where they are best represented. For example, in the United States, women represent 7.3 percent of all firefighters, which is high compared to other regions (e.g. in Spain, women are 2 percent of firefighters⁷). We also tagged within this role, papers that mentioned how women from affected locations decide to engage in 'fighting' fire during an emergency. Connected to the tag 'impacted', we found several papers which discussed the particular impacts and risks assumed by female firefighters (e.g. chronic pain, García-Heras et al., 2022; post-traumatic stress disorder, Becker et al., 2022; adverse reproductive outcomes, Jung et al., 2021), given the fact that the firefighting profession is one of the most risky and impactful professions in the world.

Several papers of our list discuss how firefighting is associated with traditional values of hegemonic masculinity, including physical strength, technical competence, leadership and authority, along with heterosexuality, courage and aggression. Reimer and Eriksen (2018)

also note, regarding a case study in Canada's British Columbia Wildfire Service, that wildfire firefighting is traditionally associated with white (Caucasian) heterosexual men. In this regard, firefighters, both men and women, 'must perform certain types of masculinity in order to receive social acceptance or personal self-worth' (p. 716). Fire-fighting has been also described as framed by ageism, sexism and homophobia (Eriksen et al., 2016a,b). Also, Rapp and Wilson (2022) analyse how fire managers in the US described how 'the archetypal fire manager is tall, stoic, muscular, and male', and, by not fitting that physical appearance, women may not receive the same implicit trust and assumed competence as their male counterparts. A very concrete example that shows how women are not considered firefighting subjects – or that those who do are considered freaks – is the fact that firefighters' uniforms are not adapted to non-male bodies, as revealed in McQuerry et al.'s case of the United States (McQuerry et al., 2023). And in an article written earlier, regarding Australia, Eriksen discussed how female firefighters discuss this specific fact with humour (2019).

From our review, all the papers we found that dealt with case studies referenced countries located in the Global North. The work of Eriksen (2014, 2019) and her co-authors (Eriksen and Gill, 2010; Eriksen et al., 2016a,b; Reimer and Eriksen, 2018) is key here, reporting on normative firefighting culture in Australia and Canada. Reimer and Eriksen's work in British Columbia (2018) describes how 'wildland fire culture is defined as a process enacted through competition, self-reliance and skill' (page 717), wherein the masculine is associated with strength, the feminine with weakness. The authors show how gender makes a difference in how participants are treated at work, where expression of emotion is seen as weakness, and males who perform hypermasculine leadership are clearly viewed as leaders (by their colleagues and local communities). The authors also argue that the fight against fire is usually understood as a process of maximum competition between nature and humans, and in this struggle, strength and leadership are seen as the most valuable attributes for the victory of the latter. Some authors describe how these perceptions particularly impact women: while women's voices and labour potential are often ignored or marginalised some 'female firefighters have known how to appropriate models of masculinity in their leadership style (being pushy, abrupt and assertive)' (Reimer and Eriksen, 2018:717). This means that women involved in professional extinction tasks tend to hide traits that are socially conceived as 'feminine' (e.g. the expression of emotions) because they understand that these are likely to be interpreted by colleagues or local communities as signs of weakness (Ragland et al., 2023). García-Heras et al. (2022), cited in Reimer and Eriksen (2018) caution that the cultural valuation of the binary masculine-strong/feminine-weak in wildland firefighting negatively affects the mental health of female leaders in Australia, while Eriksen (2019) also points out that female firefighters tend to use humour as a way to deal with male privilege within the patriarchal stronghold of wildland firefighting in Australia (2019).

A woman we interviewed in rural Galicia illustrates this role, and its contradictions. Soledad⁸ works as a firefighter at the fire helicoptered brigades, in an area affected annually by forest fires. She says, 'I love nature, the forest, action. We are few women, but I feel valued as one more (man)'. When we ask about possible gender issues or conflicts, she continues: 'Sometimes we have to read some comments or jokes in our WhatsApp group that are a bit too sexist... but we need to take it all with humour, otherwise we do not survive. Sometimes they (men) only shut up if we use their same rude vocabulary'. Her words exemplify her passion for the job of firefighter as well as her struggle and strategies to deal with the conditions imposed on women in the context of everyday, unequal gender dynamics.

⁶ Pseudonym. Interview and participant observation of her work in August 2014.

⁷ <https://www.frontlinewildfire.com/trailblazers-women-wildland-firefighting/>. Accessed October 2023.

⁸ Interview November 2019.

4.4. Women as caregivers during wildfire emergencies

The specific role of women assisting in the contexts of disaster has been extensively analysed, from multiple perspectives and geographies. Elaine Enarson's work helped make visible the role of women in disasters, as active subjects, beyond victimization (e.g. Enarson, 1998; Enarson and Morrow, 1998; Enarson et al., 2018), showing that the gender-based vulnerability of women to disaster was well-documented (e.g. Blaikie et al., 2004), but that women's instrumental and proactive work during and after disasters was not: 'despite their central roles in families, communities, and economies, women are relatively invisible in the world of disaster planning and response and their considerable efforts before, during, and after natural disaster are masked by the female victim/male rescuer paradigm' (Enarson and Morrow, 1998:171). However, much to our surprise, little attention has been paid to the specific case of women as caregivers during wildfire emergencies, which we identified in only six publications among our sample.

Our review found some authors who discuss how women's traditional community-building roles place them at the forefront of forest-fire dynamics, even if their tasks, compared to firefighting, are given little social recognition. In their case study in Greece, Zabanitoutou et al. (Zabanitoutou et al., 2021) briefly mention how women tend to be faced to "greatest risk as they got in action to save not only their own lives but also those of their children and elderly people of the family" (page 15). Regarding a large wildfire in Sweden in 2014, Danielsson and Eriksson (2022) note that it was often women who coordinated activities at the gathering points to ensure that firefighters and rescue staff were fed, listened to, cared for and had places to sleep – all tasks that received a great deal of local praise and attention. Even so, media reports focused mainly on the on the male-dominated technical work of firefighting, neglecting these women-coded tasks associated with providing social care and services. But even when women did engage in male-coded work (related to firefighting), they were viewed with suspicion or as lacking authority. Similarly, González-Hidalgo (2023) reports how women were key to supporting neighbouring communities by collecting provisions, water, blankets or sustaining networks to exchange of information during an intense wildfire in Sweden in 2018, caring for the reported needs of both community members and firefighters. Also, Walker et al. (2020) describes how it was primarily women who initiated an exhibition that allowed residents to reflect on and share their experiences of a wildfire in Canada. Recognising these tasks and making the visible, as Bautista (2022) notes regarding her research in Canada, helps us to further understand, how, even if women are evacuated, this does not happen passively, since "they were instrumental in dealing with the needs of evacuees, avoiding conflicts and communicating with non-Indigenous organizations like the Red Cross" (page 62).

Our field recollections clearly confirmed what the literature stated. Take, for example, the case of Alma,⁹ an elderly retired woman living alone in Kårböle, in Ljusdal Kommun, Sweden – a place that had to be evacuated due to wildfires in central Sweden in 2018. Alma talked passionately about environmental politics and the need to transform and improve rural areas so that younger generations would be interested in staying or migrating there. Viewing the burnt landscape as we spoke, she recalled how frightened she had been during the fire, and still today she panics each time she sees smoke in the distance. She tells us she cannot sleep due to memories of the fire but, or and, she explains how, during the fire, she could not 'do nothing'. She organised the village to ensure there was food, hot beverages, and infrastructure to help voluntary firefighters. She talked constantly to other (female) friends, who were all key in supporting villagers and firefighters – i.e. updating the whole village via a Facebook group on the status of the fire, what was needed, etc. – while their husbands carried out more official firefighting roles. While these women's care-work was visible and recognised at the local

scale, it remained invisible in official and national accounts of the emergency.

4.5. Women as setters of fire

In the identified articles, we found a role that has received far less attention than others have: women as users of fire, that is, as setters of (wild)fires, which they do for a diversity of reasons. The articles that we categorised with this tag show that (as is true in other roles) while men are usually considered to be the ones who are responsible for the use of fire, women – and particularly indigenous women – also use it, and know how to use it. These intentionally set fires are used, for example, for conservation of the savanna in Ghana (Amoako and Gambiza, 2022) and the páramo in Ecuador (Díaz et al., 2023) or for the generation of pastures in Kenya (Kamau and Medley, 2014) or activity hunting in Australia (Bird et al., 2008). However, as responses to a survey conducted in the United States show (Berget et al., 2024), women tend to have less confidence in their own abilities to carry out fire management in prescribed burning, compared to the level of confidence shown by male forest landowners. As mentioned before this particular knowledge and these practices regarding the use of fire have often been disregarded in forestry management regimes, since "women and indigenous communities have tended to be excluded from decisions that shaped colonial fire management practices," as discussed by Morgan and Burr (2024:1918) for the case of Canada, and Eriksen and Hankins (2014) for Australia and California.

In discussing this particular role of women in wildfires, our own research experience in the field does not so much confirm the arguments found in these articles, but it does highlight an aspect of this use of fire that we did not find in them, and yet, we did find in our fieldwork. From the point of view of fire ecology, we very much appreciate that all these works consider the "good" uses of fire – that is, those that are associated with initiatives that are positive for land management. From a feminist perspective, however, we are surprised that the role of women starting "bad" fires, that is, as arsonists, appears nowhere in this set of articles.

In our understanding, the role of women as arsonists has been ignored largely because of the stereotypes that define the relationship between femininity and fire. Our work on environmental history in rural Galicia helps us analyse this issue: In Galicia, judicial authorities who sought to identify fires instigators during the Franco dictatorship (1939–1976) reported a low percentage of women within the group of arsonists. For example, Freire (Freire Cedeira, 2014:123) indicates that, according to reports by the Civil Guard, 13 percent of the fires occurred in the province of A Coruña, where they damaged a reforestation initiative imposed on their communal forests by the Francoist repopulation policy; of these, in cases where the culprit is known, 6 percent were linked to women. For the province of Lugo, 6 percent of arsonists were women, but that figure includes only age cohorts of 17–60 years, so the figure would rise if girls and elderly women were taken into account (Cabana Iglesia, 2007). We found some specific examples of this role the archive¹⁰: Dolores was responsible for a fire that, on August 13, 1962, charred 4500 feet (2 ha) of 4–8-year-old *Pinus pinaster* plantation; and Trinidad started a fire on March 21, 1973, that affected almost 20 ha of trees and more than 30 ha of scrubland. Their actions were part of the peasant resistance against the loss of their rights to use communal forests, which the Francoist reforestation regime had encroached upon (Rico Boquete, 2000; Seijo, 2005; Cabana Iglesia, 2023). When they were identified by the forest authorities, these women ingeniously hid their intentional actions. They claimed they were carrying out agricultural burnings but were unable to control the fire. This oft-repeated argument worked well as an excuse because it aligned with prevailing gender stereotypes. Francoist discourse was profoundly *macho* so women were seen as weak and vulnerable, and their intelligence and

⁹ Interview August 2019.

¹⁰ Provincial Historical Archive of Lugo, Galicia, Spain.

abilities were questioned and undervalued. Even so, forest legislation in that period prohibited starting any type of bonfire for any reason (to warm up, cook food, regenerate pastures, etc.) in the repopulated perimeters or their immediate surroundings, and local communities – both men and women – were well aware of this. But as James C. Scott (1985) points out, feigning a lack of intentionality is one of the weapons of the weak. These women were subjects opposing Franco's forestry policies, either because they explicitly wanted to damage the reforestation regime or because they wanted to continue carrying out the traditional agricultural work that they knew had become a crime. So, they used to their advantage the deeply rooted traditional practice of agricultural burning and charged it with political significance.

5. Discussion: trending topics and silences around the role of women in wildfires

The previous sections summarised our review, which sought to answer the question: How are women depicted in the literature on wildfires? Based on our findings in the literature and our own research experiences, we identified five roles in the literature: women as impacted by wildfires, women as firefighters, women as holders of particular perceptions and knowledge, women as caregivers, and women as fire setters. The identification and analysis of these roles helps us to highlight various assumptions regarding women and wildfires, as well as those aspects that are usually rejected. Naming and opening up these diverse roles of women in wildfires shows how a sensitive and radical gendered lens on disasters such as wildfires can reveal the diversity of women's capacities, vulnerabilities and contradictions, beyond simplifications or essentialisations. Of course, real people exposed to wildfires are much more diverse, complex, ambivalent and rich than this artificial categorisation: these roles are not isolated, since they can be present at very different processes of wildfires (e.g., unequally impacted women not only as part of local communities, but also fire-fighters; or women setters of fires as arsonists and as experts in the field of fire ecology). Our analysis of the literature, which sought to identify trending topics as well as silences surrounding the roles of women in wildfires, seeks to provide a more complete – even if not comprehensive – analysis of what wildfires imply for local communities, beyond the limitations we found in the documents by forestry institutions (mentioned in the introduction). This implies a consideration of women as historical, diverse and active subjects in the governance of forests and forest fires.

Our review and vignettes also show how these various roles are differently regarded, as others have discussed (see Danielsson and Eriksson, 2022). Women's roles in wildfires tend to be praised and unproblematised when they conform to traditional gender norms (women as impacted, women as caregivers), but criticised or denigrated when they are socially coded as male (women as firefighters, knowledge keepers, or fire users). As Parkinson puts it, 'in an increasingly risky world, it is vital that rigid gendered expectations be recognised as outdated and damaging' (2022:24). We hope this paper contributes in this regard: by diversifying and nuancing the discourses around women and wildfires beyond those of virtuosity or vulnerability, by discussing how and why the different roles of women in wildfires are socially and culturally valued or avoided; and by considering the interconnection of gendered discourses on women and wildfires across geographies.

Our analysis of the five roles of women in wildfires builds upon and contributes to previous studies which have extensively discussed the trend to essentialise, mystify and/or stereotype women roles in environmental change. As Section 2 noted, both feminist political ecology and disaster/wildfire studies have reported how women are uncritically assumed to be saviours of the environment or victims of its transformation (MacGregor, 2009; Arora-Jonsson, 2014). While we, too, could identify these trends in our analysis, we find that there is much more richness, diversity and ambivalence to discuss around those identified discourses. On the one hand, the role of women as impacted

by wildfires (section 4.1), represents the uneven impact of wildfires on women and therefore correlates with discourses around the women's vulnerability in disasters. In fact, our review has shown that there are many kinds of physical and emotional suffering behind each fire, and how important it is to consider, deeply and respectfully, all of them (Tschakert et al., 2019). Also, those papers in section 4.3 that refer to increased risk perceptions of women in the context of a wildfire would fit with this idea of women as "affected". Our review also points to the need to analyse the diverse range of socio-ecological, economic and cultural factors that influence the uneven toll on women in wildfires and other disasters (Enarson and Morrow, 1998). However, as Mari Carmen's vignette reminds us, viewing this role in relation to the others reveals a wider image of it, in which her vulnerability can also generate rage and other processes such as care and resistance (González-Hidalgo, 2023).

On the other hand, women's role as firefighters (4.3), caregivers (4.4) and knowledge keepers (some papers in 4.2) could align with what the critical literature refers to as 'women as saviours'. But, as the reviewed literature has shown, and our vignettes briefly illustrated, this does not take place smoothly or without tension and contradictions for these women. These different roles represent diverse capacities to resist, cope and care in a world in flames, not without everyday challenges, contradictions, dilemmas and (re)negotiations with power relations. In the same way that Hoffman et al. (2021) expresses how the fire she experienced in California in 1991 gave her absolute clarity about the functioning of society, a close look at the day-to-day lives of these women allows us to do the same, recognising the diversity and ambivalences of these three 'virtuous' roles. In our review as well as in the field, we met female firefighters who are brave both in the face of fire flames and in a patriarchal work environment that stifles them, physically and emotionally; women who help tirelessly in the event of a fire, even if they won't be socially recognised; and women whose particular knowledge is only heard if/when they have a privileged position through an intersectional axis. Nevertheless, all this comes at a price in their day-to-day lives, and it does not go unnoticed. Their coping strategies, as the literature shows, vary.

Also, our analysis of the role of women as fire setters clearly shows the need to move beyond the dichotomy between victims and saviours, leaving more space for other roles. The lack of acknowledgement of the role of women as arsonists points to an underexplored discourse that needs to be looked at further when discussing gender roles in relation to climate change and disasters. Our case study in rural Galicia poses the case of women who presumably set fire in the context of land dispossession and the imposition of forest management; their struggle is similar to current struggles against the expansion of tree plantations around the world (see González-Hidalgo and Zografos, 2017; Gerber, 2011). In this context, fire can be used as a resistance strategy, albeit with severe implications. The case of the Mapuche people jailed for presumably setting fire to tree plantations in their ancestral territories shows how the emotional, physical and territorial implications of these actions can be extremely high for land defenders, who risk their lives and integrity. In such oppressive contexts, it is understandable that Galician women strategically played with stereotypes, arguing 'not knowing', which-taken-for granted cultural discourses about women's agency supported. Still, the literature's silence about this role points to a need to transcend an accepted discourse that obscures women's role as arsonist – not to increase their persecution in the name of individual responsibility for wildfires, but to embrace and discuss, too, women's disruptive and radical actions, even when their actions might imply negative environmental impacts.

Finally, our review addresses current tensions between highly context-specific analyses and overly structural treatments of gender in environmental issues. Although we have reviewed an extensive literature, our field examples are inspired by our research and territorial knowledge of southern Chile, northern Spain and central Sweden. The forest conditions of these specific territories – mainly dominated by

monocultures or single-species forests – and fire trends, which are very high in Spain and Chile and increasing in Sweden – are unifying features despite the countries' socio-ecological and cultural differences. But they are not unique. Current trends in global climate change and expected wildfires (Coogan et al., 2019) are increasingly shaping a global *pyro-culture*, whereby recurrent, intense and large wildfires heavily inform daily social and cultural life of certain territories (Braña Rey and Casado Neira, 2014). In this context, while recognising the need for context-specific analysis of the materialisation and implications of the identified roles, we identify the interconnection of gendered discourses on women and wildfires across geographies. This interconnection, for example, is evident in the collaborative map developed by the Pau Costa Foundation, which seeks to 'make visible all women working on wildfires'.¹¹ This international map highlights the everyday experiences of women in fire brigades, their daily struggles and strategies. This is an example on how, despite structural differences among women worldwide across intersectional axes, there are possibilities for political alliances among women regarding wildfires, across but mostly beyond the identified roles.

6. Conclusion

The objective of the present scoping review was to provide an overview of the existing literature that is focused on the role of women in wildfires. We identified five roles in this body of literature, which we summarise as: (women as) impacted, firefighters, holders of particular perceptions and knowledges, caregivers and setters of fires. Reading carefully the publications which we allocate to each role, as well as analysing how these roles have received more or less attention in the literature, shows the unequally gendered geographies of wildfires, before, during and after these events. Several studies have explored whether wildfires are potential engines for change, capable of mutating or altering both social and gender hegemonies in affected communities (Oliver-Smith, 1996) or if they, in fact, deepen historically established gender roles and stereotypes within communities (Parkinson, 2022). Our analysis of the literature on wildfires and gender, with a focus on women, elucidates the contradictions and interconnections of women's diverse roles, helping us further discuss the embodied impacts and experiences of wildfires, as well as their ambivalences and contradictions.

In the face of an increasing trend to wildfires globally, due to climate change and the impacts of neoliberal policies on forested urban, peri-urban and rural areas, our analysis points to the need to critically discuss these (and other) roles for the sake of justice for women – to recognise their diverse presence and participation in all aspects of forests and wildfires. Our analysis also shows the need to consider wildfires as key socio-ecological processes associated to forests and rural communities. A nuanced consideration of the gendered geographies of wildfires, beyond constrained conceptualisations of virtuosity or vulnerability, can reveal underexplored knowledges, strategies, and capacities that can be key resources in forest-fire prevention, mitigation, response and restoration. These questions are key to understanding – locally and globally – just socio-ecological transformations in the context of global environmental change beyond caricaturing of the roles of women or rendering them invisible.

CRedit authorship contribution statement

Marien González-Hidalgo: Writing – review & editing, Writing – original draft, Formal analysis, Data curation, Conceptualization. **Ana Cabana Iglesia:** Writing – review & editing, Formal analysis, Data curation, Conceptualization.

¹¹ See <https://storymaps.arcgis.com/stories/11ac3b28fa054fb5a962ec2e06bb46e4>. Accessed November 2023.

Data availability statement

The data are not publicly available due to privacy or ethical restrictions.

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Declaration of competing interest

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Appendix A. Supplementary data

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Data availability

Data will be made available on request.

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