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Masculinities in Conservation Science, Policy and Practice: A Qualitative Systematic Review

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Received: 11 May 2025 | **Revised:** 19 September 2025 | **Accepted:** 13 November 2025

ABSTRACT

Gender equality is a key target for conservation but is often treated as a women's issue with limited attention to the roles of men and masculinities in perpetuating unequal gender relations. This paper provides a qualitative systematic review of academic literature on "masculinities"—actions, norms, and values associated with men—in the conservation sector and synthesizes the reported effects of masculinities on conservation science, policy, and practice. We adopt a performative and intersectionality-inspired approach, recognizing that masculinities may be performed by men, women, nonbinary, and gender-diverse people, and that gender interacts with other dimensions of identity such as race, age, and (dis)ability. We found that the current literature primarily reports conservation masculinities performed by White men in Global North and settler-colonial contexts. The most common actions and norms were the exercise of control/authority, rationalism, and strength, and the most common effects were the marginalization of others, prioritization of natural sciences over other knowledge, and support for policies such as protected areas and militarization. Explicitly addressing the dominance of such masculinities, as well as the conditions through which their dominance is enabled and rewarded, may contribute towards gender equality and to more just and effective forms of conservation.

1 | Introduction

Gender equality is increasingly recognized as an important issue in conservation, from local to global contexts. The Kunming-Montreal Global Biodiversity Framework (GBF) aims to "ensure gender equality in the implementation of the Framework through a gender-responsive approach, where all women and girls have equal opportunity and capacity to contribute" (Convention on Biological Diversity 2022a, 13). Research suggests that conservation interventions that do not explicitly consider gender can reinforce the marginalization of women and gender-diverse people in affected communities and negatively affect conservation outcomes (Agarwal 2009; James et al. 2021). There is also growing awareness of discrimination towards women and gender-diverse people in the conservation sector itself, including harassment and reduced pay, leading to stress, poor health, and reduced abilities to thrive in the sector (Jones and Solomon 2019; James et al. 2023). Conversely, there is a growing recognition of the value of gender

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diversity for more equitable and effective conservation decision-making (Westerman 2021). Over the past decade, there has been a movement towards the pursuit of greater gender equality in conservation, with a focus on gender mainstreaming, women's networks, and women's leadership programs (Poor et al. 2021).

Nevertheless, despite growing recognition of the importance of gender equality, there has been limited attention to the roles of men and masculinities in conservation. Lau et al. (2021) highlight assumptions about gender in climate change research, also relevant to conservation, that have contributed to this situation, including that: (i) Gender is a women's issue, (ii) women are a homogenous, vulnerable group, and (iii) that achieving gender equality is simply about increasing the number of women in the sector. Together, these assumptions imply that gender is always a binary (women/men); neglect diverse gender identities and relations; imply that the everyday practices and philosophies of conservation are gender neutral (i.e., something that everyone can participate equally in); and absolve men from responsibilities to enact equitable gender relations (Djoudi et al. 2016; Gould et al. 2018). By contrast, explicitly engaging with masculinities helps to highlight the gendered actions, norms, and values that produce gender inequality, including interpersonal relations but also knowledge and practice in the conservation sector, and equalizes attention and responsibility for addressing gender inequality (Bossert et al. 2024). The achievement of gender equality in conservation requires the engagement of women, men, and gender-diverse people in deeper conversations about the complex and often implicit ways in which unequal gender relations are enacted through conservation (Lau 2020; James et al. 2023).

There is much research on masculinities in the social sciences and humanities, including in relation to conservation, sustainability, and the environment, that can inform efforts towards gender equality in conservation (Box 1; Innes and Anderson 2015; Hultman and Pulé 2018; Laszlo Ambjörnsson 2021; Reeser 2023). Gender, feminist, and masculinity studies suggest that it is useful to approach gender as a social performance (Butler 1990) or practice (Connell 2005). Performative and practice-based approaches propose that gender does not refer to naturally occurring characteristics of assigned sexes, but rather to socially constructed and negotiated ways of being associated with different sex assignations that vary significantly across time and space (Gottzén et al. 2020). Patterns of actions, norms, and values associated with the relative positions of men, women, and gender-diverse people in a given context are understood as, respectively, "masculinities" and "femininities" (Connell 2005). Masculinities and femininities may be performed by those identifying as men, women, and gender-diverse identities (Halberstam 2019) and "intersect" with other dimensions of difference including race, class, age, and (dis)ability (Crenshaw 1991). Gender is inextricably linked to power, as certain gender performances can become privileged, positioning some in relations of power over others (Connell and Messerschmidt 2005). Structural discrimination and inequality are highlighted (in Western contexts) through concepts such as hegemonic masculinities (masculine dominance achieved consensually), toxic masculinities (dominance achieved through extremely destructive and coercive practices), patriarchy (structures that sustain male supremacy), and kyriarchy (intersectional power structures including gender, race, and class) (Osborne 2015; Zhao and Roberts 2025). However, it is important to recognize that gendered knowledge and practices are common around the world and are not necessarily considered unequal or discriminatory in themselves (Davies et al. 2018). In conservation, Lau (2020, 1590) proposes that performative and intersectional approaches highlight how "gender relations are repeated, contested, adjusted, and re-instilled through everyday practices governing biodiversity use across scales," and can help to develop more sophisticated and culturally appropriate approaches to the pursuit of gender equality in conservation.

In this paper, we provide the first synthesis of the existing academic literature on the effects of masculinities in conservation science, policy, and practice through a qualitative systematic review. We aim to summarize the literature, currently dispersed across many fields, and make it visible and actionable to conservation audiences. Unlike many systematic reviews in the conservation sciences, our aim is not to assess the outcomes or effectiveness of a particular intervention (Pullin and Stewart 2006). Rather, we seek to elucidate the patterns of scholarly research into the performance of masculinities in conservation that is, what research has been conducted, where, and how, and the meanings of these performances in the contexts of their studies (e.g., Golebie et al. 2022). We seek to answer: What is the current state of academic knowledge regarding the performance and effects of masculinities in conservation? The review draws together distributed threads of research and contributes to (i) the articulation of new research directions and questions around the effects of gender relations in conservation (Bossert et al. 2024), and (ii) efforts to transform conservation towards a field supportive of social-ecological diversity, pluralism, and justice (Cumming et al. 2023; Wyborn et al. 2021).

2 | Methods

This paper was developed by an international, interdisciplinary group of scholars with a shared interest in the social aspects of conservation and ecosystem management. The core methodological aspects were led by SW and OL. Most of the author group are trained in the (environmental) social sciences and humanities (including SW and OL), and several have long experience in gender studies (ELA, KLD, GW, MS, OL). There are many different intersectional identities within the group: SW identifies as a white, cisgender man from the United Kingdom, while OL identifies as a white, gender nonconforming person from Australia, although they recognize their socialization as a man. We have both benefited from our positions in the gendered power relations of our respective contexts, yet we experience discomfort from these positions. While we are not masculinity studies scholars per se, we share a motivation to reflect and contest the masculinities that we are implicated in and often feel pressured to enact. We have found gender and masculinity studies useful in these efforts, and hope that this paper contributes to increased collaboration between conservation, gender, and masculinity studies in the future.

Our methodological approach is the qualitative systematic review, a method from the (Western) social sciences for "integrating or comparing the findings from qualitative studies" (Grant and Booth 2009, 94). Qualitative systematic reviews aim to

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BOX 1: Glossary

Conservation: Conservation is a contested term encompassing different approaches to the preservation of biological and cultural diversity (Soulé 1985; Büscher and Fletcher 2020). We use the term in a broad umbrella sense to encompass the diversity of approaches self-defining as part of the "conservation movement" (Cumming et al. 2023).

Sex: The assignation of individuals as "intersex," "male," "female," or otherwise based on physical characteristics including chromosomes, hormones, and reproductive organs (Ainsworth 2015).

Gender: The sociocultural constructions, norms, and expectations around women, men, and gender diverse people that "shape people's opportunities, experiences, social practices, and relations in day-to-day life" and that differ across contexts, times, and circumstances (Lau 2020, 1590).

Masculinities/femininities: Patterns of social practice, including actions, norms, and values, that are associated with the relative positions of men, women, and gender diverse people in a particular social context or gender order (Connell 2005).

Performative gender identities: The idea that gender identities and relationships are not static or determined biologically but socially enacted or "performed" through a "stylized repetition of acts" (Butler 1988).

Intersectionality: The idea that gender identities interact or "intersect" with multiple dimensions and categories of difference including ethnicity, race, age, class, (dis)ability, and others, to shape the experiences of individuals and social groups (Crenshaw 1991).

Subjectivities: The ways in which people internalize and enact certain identities and "the opportunities or barriers related to these identities" (Lau 2020, 1590).

Gender equality: The concept that men, women, and gender-diverse people should "have equal conditions, treatment, and opportunities for realizing their full potential, human rights, and dignity, and for contributing to (and benefitting from) economic, social, cultural, and political development" (UNICEF 2017, 3).

Gender equity: The idea of fairness, in the sense that the achievement of gender equality requires the consideration of differential power relations, histories, situations, and social contexts. For example, this might include providing additional resources to historically marginalized groups to achieve equal outcomes in the present (UNICEF 2017, 3).

Gender-responsive approaches: Policies and programs that involve "understanding and consideration of socio-cultural factors" underlying gender and sex-based discrimination, as well as efforts "to overcome gender biases in order to improve gender equality" (Götzmann and Bainton 2021, 173; Woodhouse et al. 2022).

Gender-transformative approaches: Policies and programs that aim to transform norms and cultures around gender, including through engaging women, men, and gender-diverse people in sustained reflection on gender roles and expectations, often with a more explicit focus on power relations (MacArthur et al. 2022; Woodhouse et al. 2022).

identify and interpret "themes" that lie across individual qualitative studies and often incorporate quantitative and qualitative elements, for example, reporting the frequencies of qualitative themes (Selvi 2019). We chose this approach because we wanted to understand the existing academic literature on masculinities in conservation through a method recognized in the conservation sciences (e.g., Golebie et al. 2022). However, a systematic review is only one very partial way of making sense of the literature and could be considered representative of the (Western) masculinities that we seek to critically appraise (Tynan and Bishop 2023). We are committed to living with and working through these complexities and contradictions while learning from the many scholars and practitioners who have been engaging in work on gender and conservation for decades. We followed the PRISMA guidelines for systematic literature reviews through two primary stages: A systematic literature search and screening process followed by qualitative coding and content analysis of the literature (Page et al. 2021).

2.1 | Literature Search and Screening

Our search and screening process consisted of: (i) Identification, (ii) screening and eligibility, and (iii) inclusion (Figure 1). To identify relevant literature, we conducted structured systematic literature searches in Scopus and Google Scholar (GS). We chose Scopus over Web of Science because of its better coverage in the social sciences (Martín-Martín et al. 2018) and GS because, despite inconsistencies including duplicate entries and incomplete bibliographic information, it remains the most comprehensive database for academic articles, especially across the humanities and social sciences (Martín-Martín et al. 2018). To capture works relating to the study of masculinities, we used the terms *masculine*, *masculinity*, and *masculinities*, and for conservation, we used a number of terms including *biodiversity conservation*, *ecosystem management*, *nature conservation*, *environmental management*, *land management*, *forest*, *hunting*, *marine protected area*, *ocean conservation*, *marine conservation*, *rewilding*, *restoration*, and *reforestation*. Given the large number of search terms, multiple search queries were developed for both Scopus and GS (see Supporting Information for the full queries).

For Scopus, three searches were conducted with results filtered for English language only. We specified that search terms had to be in each paper's title, abstract, and/or keywords sections. No other limits were set. In total, 2479 articles were returned. For GS, 11 searches were conducted in a private browsing tab through a virtual private network to ensure prior browsing history did not influence the results algorithm. All 10 results from the first 20 pages of results were included from each search. Duplicates, results with incomplete citation information, results in languages other than English, and non-peer reviewed sources (i.e., unpublished conference papers, theses, and reports) were excluded, with 1965 articles selected. The total number of articles returned from Scopus and GS searches was 4444. We screened these articles through a three-stage process (Figure 1). Articles were assessed with a predetermined set of inclusion and exclusion criteria in terms of whether they discussed masculinities in the context of biodiversity conservation policies, institutions, or practices, and whether they presented empirical research. Duplicates, articles with incomplete bibliographic data, non-peer reviewed sources,

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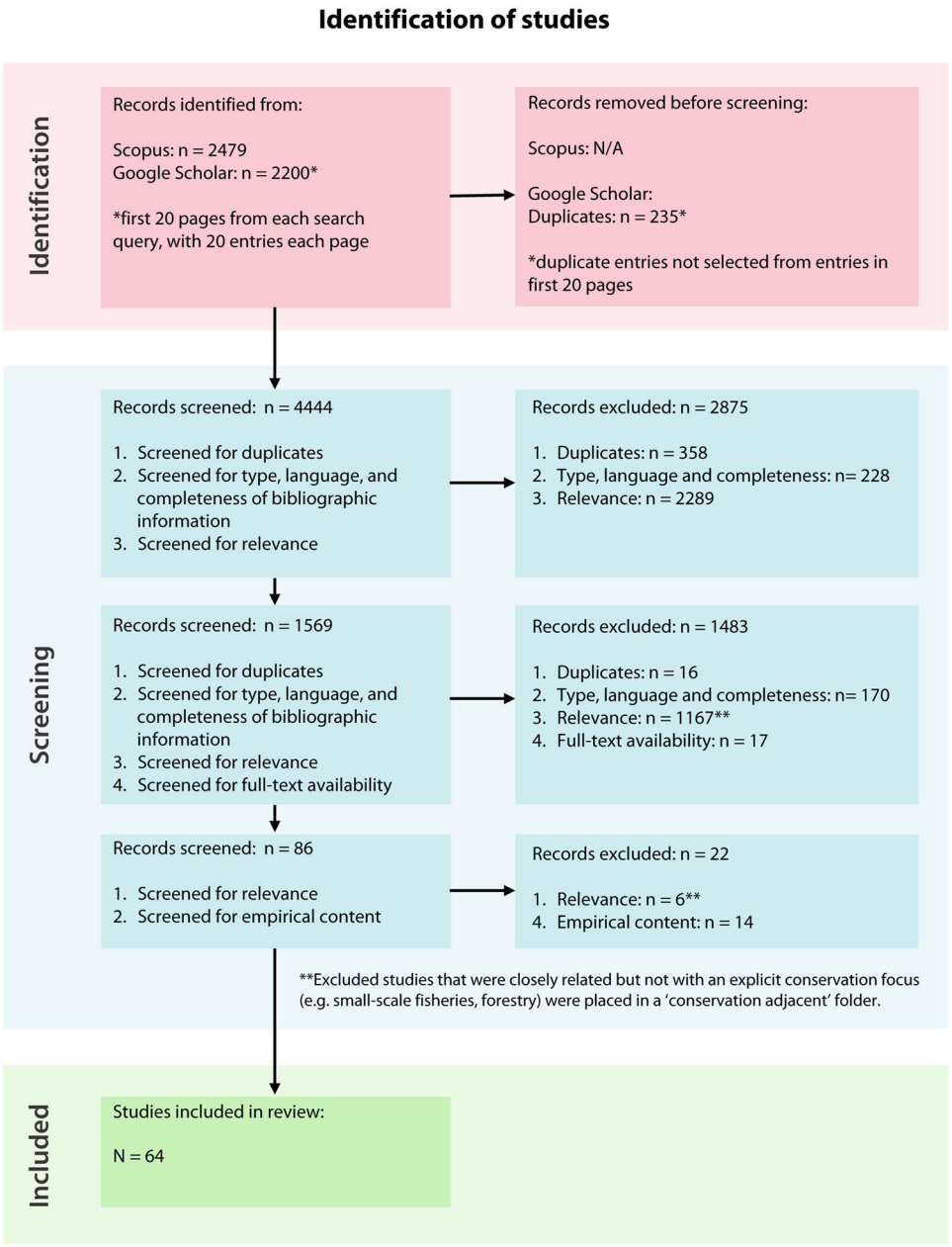

FIGURE 1 | PRISMA diagram of qualitative systematic literature review screening method (for full PRISMA checklist see Supporting Information).

and any articles not in English were also excluded. Following the final screening process, 64 articles were included in the final dataset (see Supporting Information for final dataset and full methodological details).

Restricting our search to academic, empirical literature in the English language has several limitations. Academic publishing is dominated by the Global North, limiting voices from the Global South. Likewise, we missed out on much potentially relevant information on masculinities in conservation from grey literature (including social media). Moreover, limiting our search to paper titles, abstracts, and/or keywords excluded literature that discusses masculinities only in the main body text. Nevertheless, we made these decisions to make our study more manageable and repeatable, and the limitations represent possible areas for future research.

2.2 | Coding and Analysis

We used qualitative content analysis (QCA) to identify and interpret patterns across our dataset of 64 articles (Selvi 2019). A central aspect of QCA is qualitative thematic coding, where each text is read closely and specific ideas, concepts, and other information are grouped into themes. We combined deductive and inductive approaches to coding, starting with a framework based on our existing knowledge of the literature but iteratively adding and adjusting relevant codes throughout the pilot coding process as themes emerged from the articles (Selvi 2019). When coding the actions, norms, and values associated with masculinities, and the effects arising from them, we applied the codes according to the analysis presented by the paper's authors. We were interested in what the authors had said about masculinities and their impacts rather than what we, as analysts, could infer

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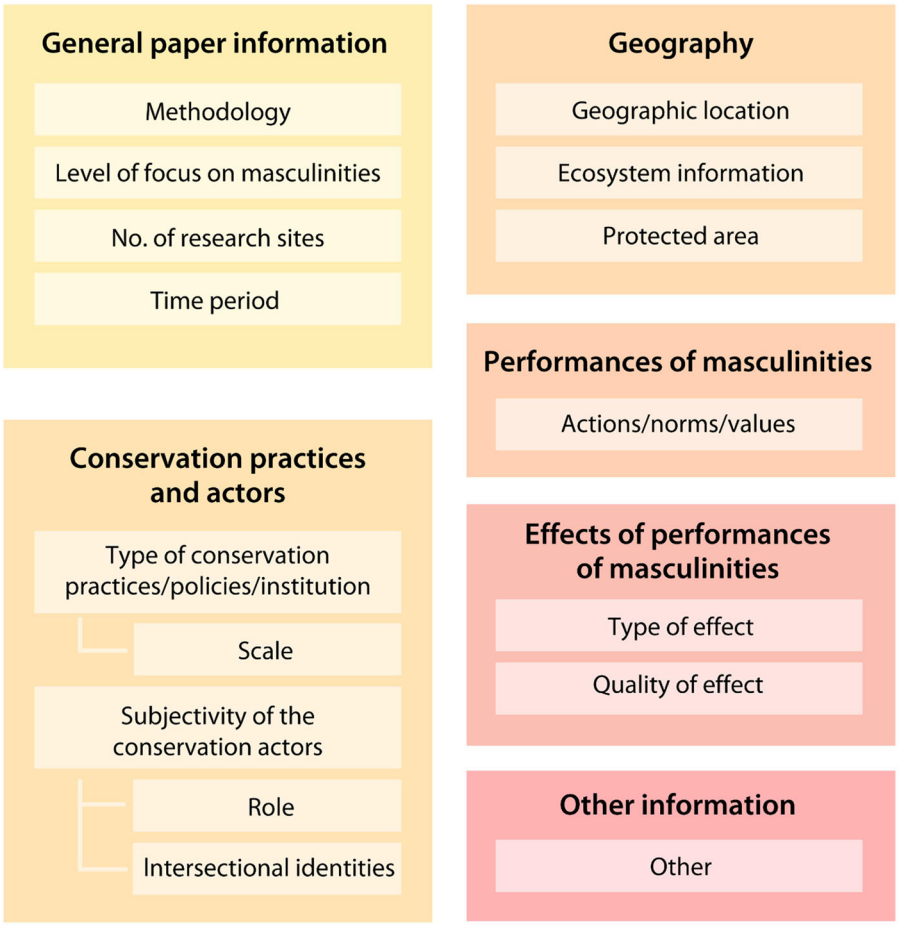

FIGURE 2 | Simplified coding framework (for full definitions see Supporting Information).

about masculinities from the evidence presented in the articles. In addition to qualitative coding, we recorded other information about each paper, including the number of study sites, geographic locations, methodologies used, and time periods during which the research was conducted or with which the research was concerned (see Figure 2 and Supporting Information for our final coding framework).

OL and SW conducted a pilot on a subset of 15 articles with diverse topics, journals, and publication dates. The pilot revealed minimal divergence in our interpretation and application of the coding framework. Where competing interpretations occurred, we discussed differences until a single interpretation was agreed. Subsequently, we divided the remaining articles evenly and commenced coding simultaneously. All coding was completed in Microsoft Excel using a framework designed to: (i) Allow sections of text to be assigned multiple codes, and (ii) ensure the data could be filtered and compared between and across codes while ensuring every unique datum did not become disconnected from the related entries, for example, the subjectivity of a person performing a masculinity, the actions, norms, values, and attitudes associated with the performance, and the effects of the performance. During the coding process, we were in constant communication to ensure consistency in the application of the coding framework. We had access to each other's work and regularly reviewed the coding the other had completed. Once we had completed the coding process, the resulting dataset was extensively reviewed by both lead authors. Any instances of disagreement were discussed until we reached a satisfactory resolution.

3 | Results

In this section we report our results, first characterizing the temporal, methodological, geographic, and ecological scope of the literature before then exploring the enactment of masculinities and their effects on conservation science, policy, and practice. In common with other qualitative systematic reviews using content analysis, our results include quantitative and qualitative information (e.g., Enqvist et al. 2018; Golebie et al. 2022).

3.1 | Characterizing the Literature

The 64 articles included in our review were published between 1997 and August 2023 (Figure 3). Peer-reviewed journal articles comprised 79.7% (51) of the total and books and book chapters accounted for the remaining 20.3% (13). The articles covered a range of time periods (Figure 4). The decade with the most coverage was 1990–2000, while the significant coverage in the early 20th century was due to the inclusion of several articles examining masculinities in nascent colonial conservation movements (Figure 5).

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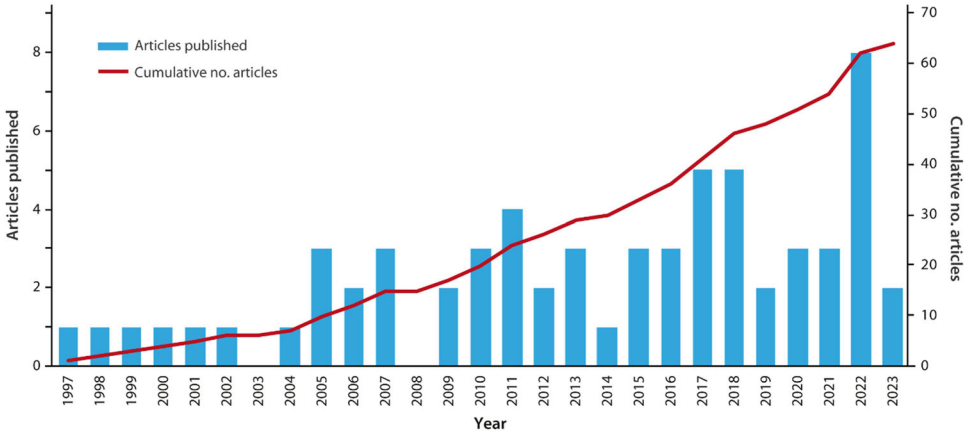

FIGURE 3 | Publication year of all 64 articles included in the review.

All articles, except one, used qualitative methods, with some articles using multiple methods (leading to a total count of 100 methods across the 64 articles). The most commonly used methods were interviews (24%, 24 instances), historical analysis (21%, 21 instances), and participant observation (12%, 12 instances) (Figure 6a). The articles explored masculinities in conservation in 19 different countries, with 68 instances of country-specific research across the 64 papers in our dataset (Figure 6c). Most research was conducted in the Global North (58.8%, 40 instances), within which the United States (33.9%, 23 instances) and Canada (10.3%, 7 instances) were the most heavily represented. For studies conducted in the Global South (38.2%, 26 instances), South Africa (13.2%, 9 instances) and India (7.4%, 5 instances) were the most represented. The settler-colonial states of Australia, Canada, the United States, and South Africa also represented a majority across the articles (61.8%, 42 instances). Notable geographic absences included East Asia, the Middle East, North Africa, and Oceania (except Australia).

Most studies addressed masculinities in the context of terrestrial ecosystems (81.8%, 54 instances) and across these studies the research was evenly split between masculinities in protected areas (44%, 27 instances) and non-protected areas (38.9%, 29 instances), with 16.7% (10 instances) not clearly defined (Figure 6b). Only 4.5% (3 instances) of studies explored masculinities in relation to marine ecosystems. Across the 64 articles in our dataset, we identified 10 types of conservation practices, adopting a broad view of "practices" to include, for example, policy and scientific practices, among others (Figure 7a). Many of the articles discussed several such practices. Filtering the coding results by geographic location, type of conservation practice, and the role associated with its enactment gave 84 unique enactments of conservation practices. Management accounted for 54.8% (46 instances) of these practices, with 37% (17 instances) of management practices occurring inside protected areas and 63% (29 instances) occurring outside. Of the management practices inside protected areas, South Africa was the most well-represented (35.3%, 6 instances), and of those occurring outside protected areas the United States was most prominent (27.6%, 8 instances).

In terms of the demographics of those enacting the conservation practices, sorting the results by geographic location, type of conservation activity, the role undertaken, and the gender and race/ethnicity of the person(s) enacting that role revealed 96 unique coded instances (Figure 7b). Many instances did not have sufficient information to describe the race/ethnicity (26%, 25 instances), gender (10.4%, 10 instances) or age (84.4%, 81 instances) of participants in the studies. Nevertheless, of the literature that contained demographic information, the most commonly reported participants were men (82.3%, 79 instances), particularly White men (54.2%, 52 instances), with women representing 7.3% of coded instances (7 instances from 7 articles). Women participants were predominantly reported as White with only 1 reported instance of a woman of color (Radel 2012).

3.2 | Masculinities in Conservation

We identified 26 broad categories of actions, norms, and values that the literature associated with masculinity and were enacted by people carrying out conservation practices, with 247 unique coded instances (Figure 8a,b). While these actions, norms, and values were distinct, they were also often closely related and mutually reinforcing. The most coded actions, norms, and values were the enactment of control/authority (12.6%, 31 instances), rationalism (8.1%, 20 instances), strength (7.7%, 19 instances), adventure (6.5%, 16 instances), and discrimination (5.7%, 14 instances). Of particular interest in the context of the growing focus on gender equality in conservation are the codes for limited inclusivity (3.2%, 8 instances), deliberate destabilization of gender norms (1.2%, 3 instances), and care (3.6%, 9 instances). Below we report findings for the most prominent actions, norms, and values (for a full list of examples see Supporting Information).

3.2.1 | Control/Authority

The code for control/authority captured instances where masculinities were associated with or valorized the exercise of power over others, including wildlife and more-than-human others. Many studies linked masculinity with the idea that nature constitutes a set of resources or assets to be "managed" or controlled by people in pursuit of certain goals (Hazlett 2004; Vainio and Paloniemi 2013). Several studies highlighted the ways in which the desire for control can animate scientific conservation research and management (Waitt and Hartig 2005; O'Brien 2007), with

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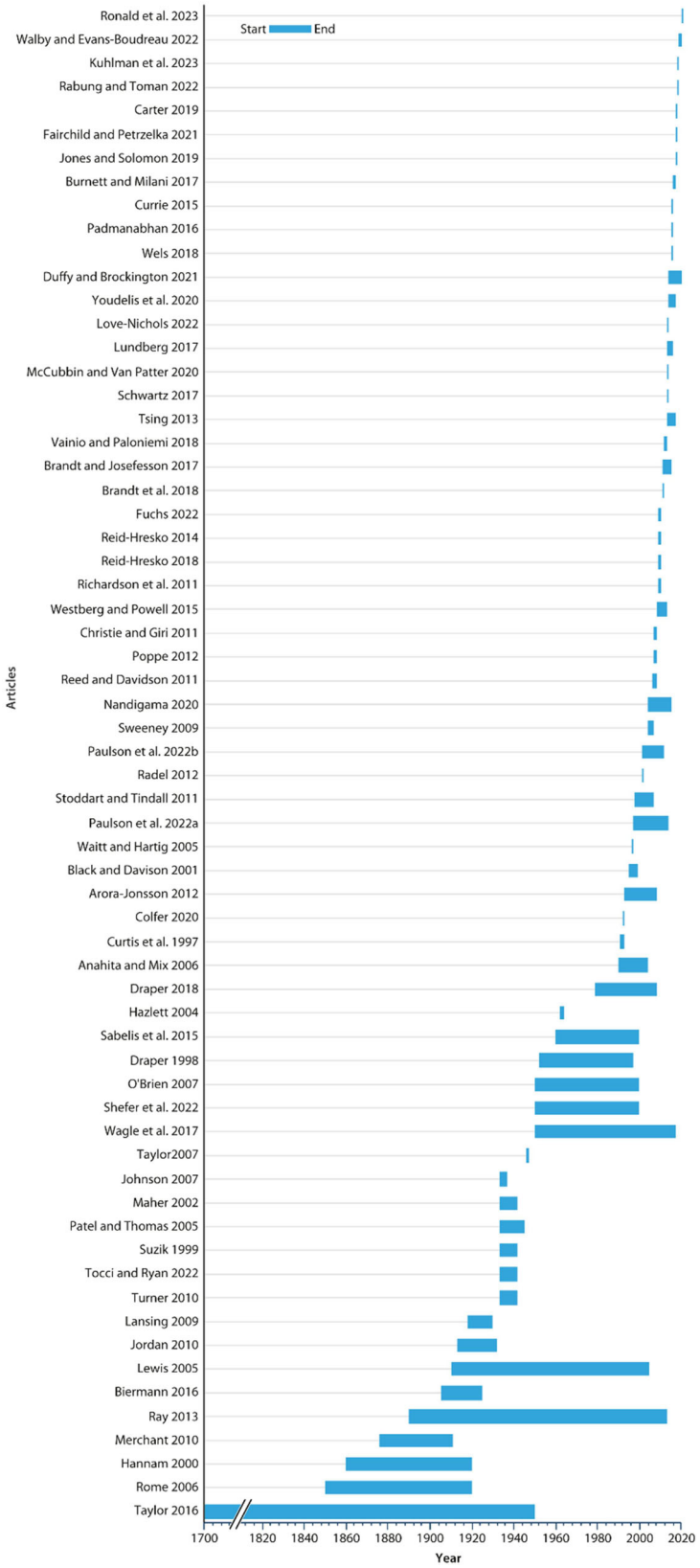

FIGURE 4 | Time periods covered by the research conducted across the 64 articles included in the review.

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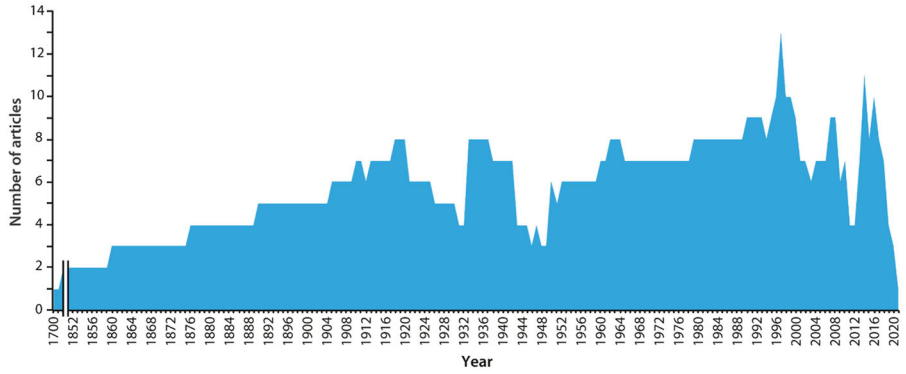

FIGURE 5 | Years covered by the research conducted across the 64 articles reviewed.

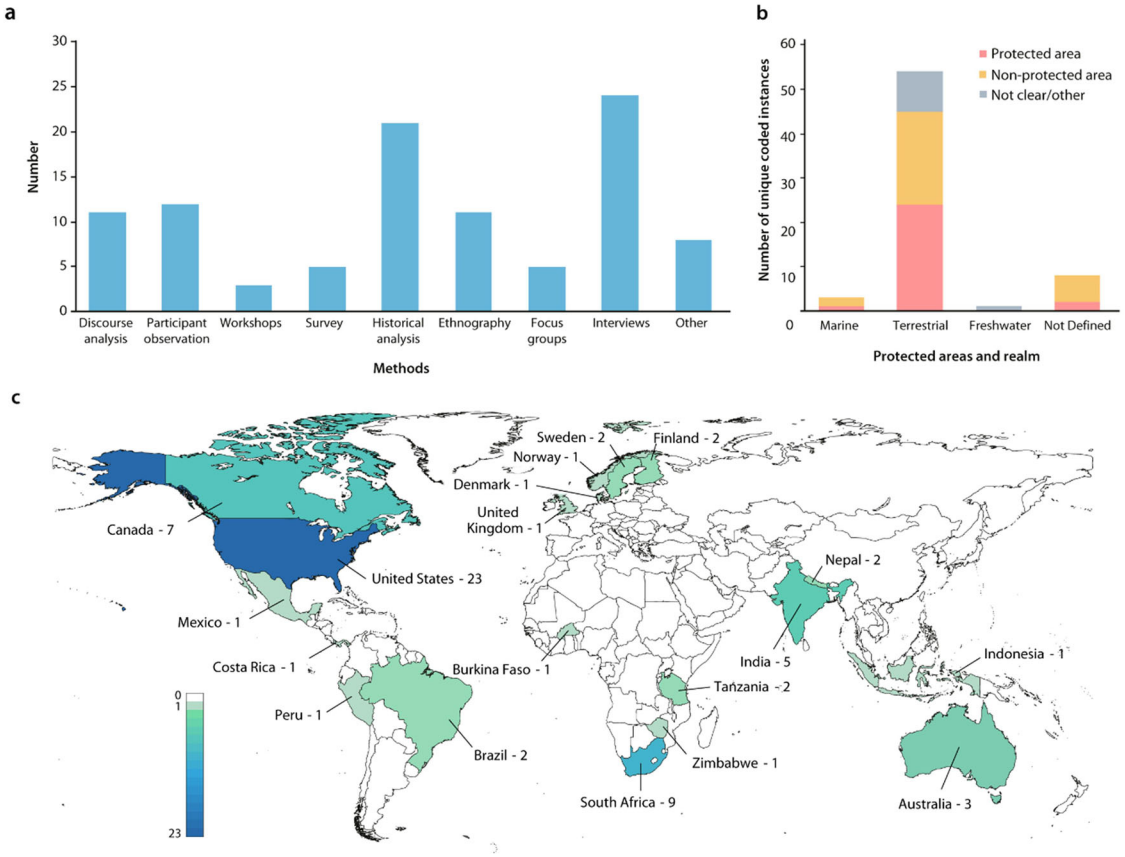

FIGURE 6 | (a) Methods used in the 64 articles reviewed; (b) Protected areas by realm across the 64 articles reviewed; (c) Global distribution of the 64 articles reviewed.

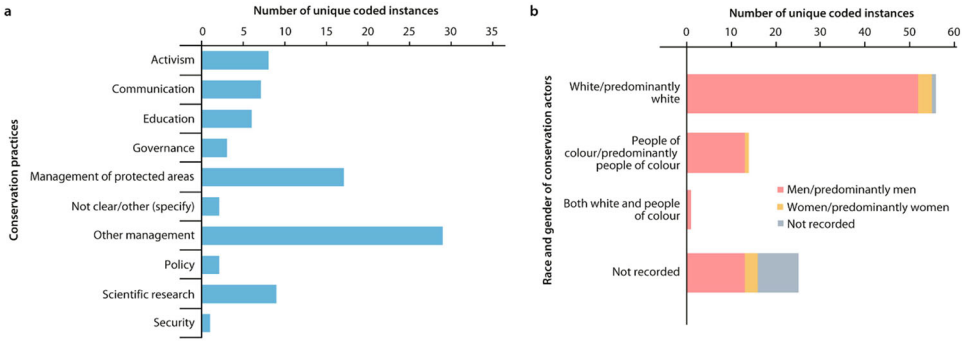

FIGURE 7 | (a) Number of unique instances of conservation practices, and (b) Race and gender of those enacting masculinities, across the 64 articles reviewed.

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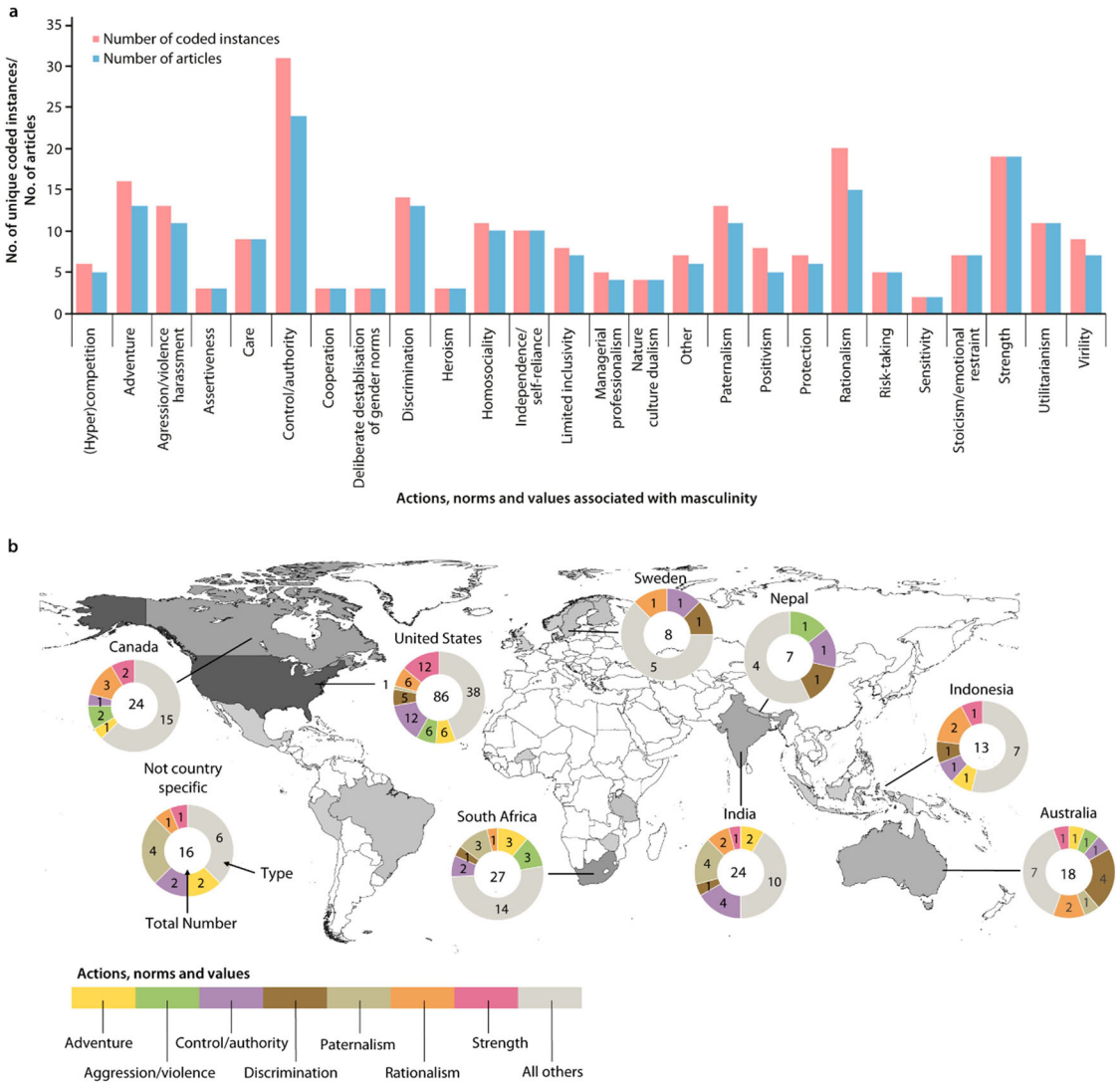

FIGURE 8 | (a) Instances of actions, norms, and values coded across the 64 articles included in the review and the number of articles from which those instances were coded; (b) Number of the 7 most common actions, norms, and values coded by country.

Anahita and Mix (2006, 343) reporting an Alaskan governor's justification for wolf management: "Well … you can't just let nature run wild." This desire for control also extended into human relationships, with many studies associating masculinities with efforts to retain control over decision-making processes at the expense of women and gender-diverse people (Lewis 2005; Jones and Solomon 2019). Control was closely associated and sometimes co-occurred in the same articles with paternalism (Brandt and Josefsson 2017) and discrimination (Jones and Solomon 2019; Waitt and Hartig 2005; Colfer 2021). The studies in our dataset primarily reported control/authority enacted by White men, with only five instances coded for people of other racial backgrounds.

3.2.2 | Rationalism

The code for rationalism captured instances where masculinities were associated with the application of logic, reason, and critical thinking in acquiring knowledge, independent from sensory and/or emotional experience. Many studies linked rationalism to the emphasis in conservation on the natural sciences as privileged sources of knowledge and highlighted how rationalism is gendered through its frequent contrast with "emotional" or "sentimental" approaches associated with women (Rome 2006; McCubbin and Van Patter 2021). Richardson et al. (2011, 529) explored the participation of women in Canadian forestry committees and quoted a male respondent as saying, "I have trouble and I think most guys do when […] it's an emotional argument, as opposed to a rational, science-based as I call it, argument, because it tends to lose credibility in the business. It's a man's business and we don't really want to hear that stuff." Rationalism was associated and sometimes co-occurred in the same articles with utilitarianism (Hannam 2000; Reed and Davidson 2011), positivism (O'Brien 2007; Westberg and Powell 2015), and stoicism/emotional restraint (Colfer 2021; Jordan 2010). Rationalism was mainly enacted by men (90%, 18 out of 20 instances), with 77.8% (14 instances) by White or groups of predominantly White men.

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3.2.3 | Strength

The code for strength captured instances where masculinities were associated with the valorization of physical strength, toughness, endurance, and vigor. Notably, several historical studies explored the emphasis placed on strength and vigor in the emergence of the conservation movement in the USA in the late 19th and early 20th centuries (Maher 2002; Johnson 2007; Turner 2010). Rome (2006) describes how male conservationists attempted to avoid being characterized by industrialists as "effeminate" by asserting their virility and strength through hunting and "wilderness" conservation and excluded women from decision-making roles (see also MacKenzie 1988). This extended from the creation of conservation organizations, such as the Sierra Club and National Audobon Society, to government programs, such as the Civilian Conservation Corps, which explicitly sought to cultivate "frontier masculinities" based on ruggedness and endurance (Suzik 1999; Jordan 2010; Ray 2013). The association of masculinity with strength continues today, as shown in recent studies of women prioritizing physical strength to "make it" in conservation sectors in Canada (Walby and Evans-Boudreau 2022) and Finland (Vainio and Paloniemi 2013).

3.2.4 | Changing Masculinities

While masculinities defined around control/authority, rationalism, and strength were emphasized in the literature, several codes indicated the existence of changing norms and expectations around gender identities in conservation, and the presence of alternative masculinities both within and beyond the Global North. The code for limited inclusivity captured instances where masculinities were associated with efforts by men to include "diverse others" in, for instance, conservation management committees (often because of external pressure), but without addressing systems of male control and dominance (Arora-Jonsson 2013; Lundberg 2018). Meanwhile, the code for the deliberate destabilization of gender norms highlighted instances where women were reported to be adopting actions, norms, and values traditionally associated with men as a means of shifting expectations and roles in conservation (Radel 2012; Walby and Evans-Boudreau 2022). Finally, the code for care identified instances whereby men were reported to be enacting "caring" masculinities, in contrast to control/authority, which were characterized by "intimate actions that nurture, protect, and regenerate" relationships between human and non-human nature (Paulson et al. 2022a, 10; Draper 1998). Such studies had a heavier emphasis on the Global South and linked to the (contrasting) paradigms of "compassionate" and "convivial" conservation (Wels 2018; Paulson et al. 2022b).

3.3 | Effects of Masculinities on Conservation Science, Policy, and Practice

The actions, norms, and values reported across the dataset were associated with a range of effects. Filtering results by geographic location, practice, role, and actions, norms and values therein, generated 313 unique effects (Figure 9a). The most common effects were the marginalization of other subjectivities (43%, 135 instances), the characteristics of conservation policy or practice (31.3%, 98 instances), and the selection of certain knowledge over others (8.2%, 27 instances). The marginalization of other subjectivities was associated most with the exercise of control/authority (15.6%, 21 instances), discrimination (10.4%, 14 instances), and strength (7.4%, 10 instances). For example, Richardson et al. 2011, 531) suggest that through the enactment of conservation practices influenced by, for example, control/authority, masculinities become the "norm" against which the legitimacy of other participants and practices should be judged: "This 'norm' has set a standard for the values and behaviors that are deemed acceptable." Black and Davidson (2001, 651), discussing the experiences of women rangers in the Australian National and State Parks and Wildlife Services, suggest that the ultimate effect is that women (and people of diverse genders) are "marginalized and excluded from a range of [. . .] positions, including managerial or more 'masculine' roles."

Effects on the characteristics of conservation policies and practices were associated most with the exercise of control/authority (10.2%, 10 instances), rationalism (10.2%, 10 instances), and utilitarianism (9.2%, 9 instances). For example, these masculinities were associated with the pursuance of Protected Areas separate to human habitation including notions of "wilderness" and "fortress conservation" (Ray 2013), lethal control of certain species (Anahita and Mix 2006) and people (Wels 2015), and the militarization of conservation efforts (Biermann 2016). Effects on the selection of some knowledge over others were associated most with the influences of rationalism (22.2%, 6 instances), control/authority (18.5%, 5 instances), and positivism (11.1%, 3 instances), with positivism broadly defined as the adherence to or valorization of epistemologies prioritizing objectivity, quantification, and empiricism. For example, Rome (2006) described the exclusion of humanistic understandings of the environment in favor of the natural sciences in the North American education system in the early 1900s, while Westberg and Powell (2015, 1241) described how (male-dominated) Swedish country administrative boards responsible for implementation of conservation policies viewed "their own knowledge as based on objective facts . . . [thus dismissing] conflicting opinions regarding nature as biased and emotional." Overall, the effects of actions, norms, and values associated with masculinities were overwhelmingly represented as negative, with the few positively represented effects associated with practices of care and cooperation (Figure 9b).

4 | Discussion

Our review highlights that the current academic literature on masculinities in conservation is relatively small and dispersed across disciplines and journals—there does not currently seem to be an established community of practice exploring masculinities in conservation. The existing literature focuses on the Global North and settler-colonial states including the USA, Canada, Australia, and South Africa. This likely reflects the historical emergence of conservation as a professionalized field in settler-colonial and European states (Trisos et al. 2021), as well as the limits of our review to English language studies and the imbalance of scientific publishing towards the Global North. It is also notable that the literature focuses on the negative and inequitable aspects of masculinities enacted by White men. While this does not mean that all masculinities enacted by

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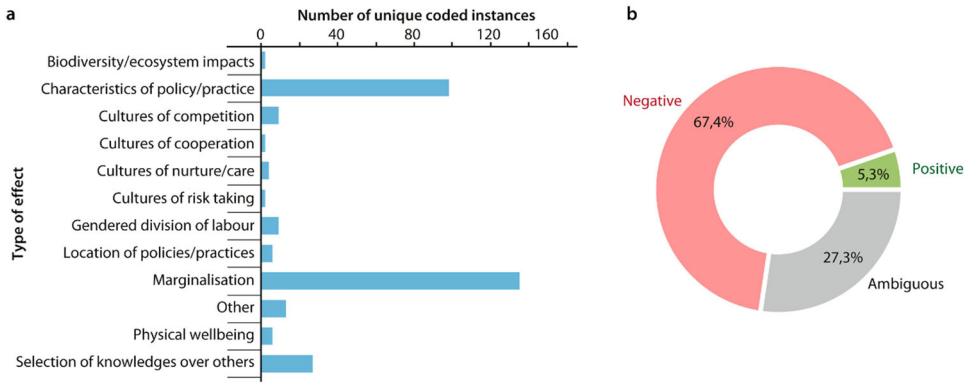

FIGURE 9 | (a) Effects of actions, norms, and values associated with performances of masculinities; (b) Quality of effects represented ambiguously, negatively, or positively.

White men are harmful, it does indicate that (White) masculinities oriented around control, rationalism, and strength have been central to the inequities produced by/through conservation (Morgensen 2015). For example, historical studies highlight the links between the emergence of the conservation movement and the expression of "frontier masculinities" that were inextricably linked with colonialism, seizure of Indigenous lands, and racial discrimination (Anahita and Mix 2006; Merchant 2010). In these contexts, men positioned women as subjective and emotional, and humanistic and experiential knowledge as feminine, and sought to professionalize the conservation sector around the "rational" scientific management of protected "wilderness" areas (Taylor 2016).

Many studies in our review highlight the ways in which this legacy continues to shape the root assumptions and practices of conservation today (Black and Davidson 2001; Reed and Davidson 2011; Carter 2019). Masculinities do not only affect interpersonal relations between conservation actors and/or communities, but also the foundational practices, concepts, and methods of conservation itself (Bossert et al. 2024). For example, Youdelis et al. (2020) explore the continued appeal of notions of "wilderness" to attract visitors to Canadian national parks, while McCubbin and Van Patter (2021) contrast the ways in which conservation at the population level is framed as "objective" and "rational" whereas individual attachments to animals are framed as "emotional" and "irrational". The gendered nature of these concepts is rarely acknowledged in conservation and they are often considered "neutral" or just "what conservation is"—indeed, a recurring feature of masculinity is that "men go to great pain to hide it and, by extension, to hide the way that it functions and operates. Hiding can allow masculinity to function without challenge or question" (Reeser 2023, 4). This highlights the limitations of addressing gender inequality in conservation by simply aiming to increase the numbers of women in the sector, if gendered assumptions and practices are not also unpacked and addressed (Lau et al. 2021). For example, Jones and Solomon (2019) and Walby and Evans-Boudreau (2022) explore the pressures women face in conservation to enact "female masculinities" of, for example, rationalism and assertiveness, to succeed in their positions. While such studies demonstrate the agency and determination of women and gender-diverse people to engage in conservation, they also speak to the need for more deep-seated strategies to address gender inequality in conservation.

Overall, our findings open several promising directions for research on conservation masculinities. First, the small number of studies on masculinities in conservation is surprising given the large broader literature on the effects of conservation interventions on gender relations in local communities (Agarwal 2009; Arora-Jonsson 2013). This highlights a need for ethnographic studies that turn the focus "inwards" onto conservation itself as a gendered practice (and male conservationists as gendered subjects), and explore how masculinities are enacted, negotiated, and challenged in everyday conservation contexts (Kiik 2018; Lau 2020). For example, the co-authors of this paper are engaged in ethnographic and participatory research in the Greater Kruger region, South Africa, which highlights the (often negative) impacts of control and strength-based conservation masculinities on men themselves, including mental and physical health (Smidt 2022; Schäfer 2025). Second, the heavy emphasis on masculinities in settler-colonial and terrestrial contexts highlights a need for comparative work exploring masculinities in different cultural and ecological contexts, reflecting the emphasis in masculinity studies on masculinities as contextual, always in movement and subject to change (Reeser 2023). Third, by highlighting the role of masculinities in shaping basic practices of conservation, our review indicates the importance of exploring the effects of masculinities on ecosystems (e.g., through area-based conservation) and to reimagine conservation practices informed by more diverse gender categories and understandings. Here, there is potential for connection with the literature on the ecological effects of masculinities (Hultman and Pulé 2018) and for collaboration between conservation science, gender and masculinity studies, queer ecology, and feminist science studies (Caniglia and Vogel 2023). Fourth, the overemphasis on masculinities performed by White men indicates the need for more work on masculinities enacted by Black, Indigenous, and people of color in conservation, as well as masculinities enacted by women and Two-Spirit, Lesbian, Gay, Bisexual, Transgender, Queer, Intersex, Asexual, and gender-diverse people (2SLGBTQIA+). For example, Indigenous scholarship has focused on renewing Indigenous masculinities against the corroding effects of "colonial masculinities" (Innes and Anderson 2015). How might such research feed into efforts to support Indigenous-led governance for just and effective conservation (Artelle et al. 2019)?

Our findings also have implications for conservation policy and practice. The Kunming-Montreal GBF aims to adopt a "gen-

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der responsive approach" to implementation, supported by the Gender Plan of Action which seeks to "ensure the engagement of men and boys, to ensure a collaborative and supportive approach towards achieving gender equality in the conservation and sustainable use of biodiversity" (CBD 2022b, 3). Gender-responsive approaches go beyond the identification of gender issues to "include proactive efforts to promote equal participation and distribution of benefits," yet are often limited in their abilities to address deep-seated cultural assumptions and power relations, including in relation to masculinities (Woodhouse et al. 2022). Our review suggests that—given the embeddedness of masculinities in everyday conservation practices—it will be necessary for conservation to complement "gender-responsive" with "gender-transformative" approaches (Casey et al. 2018). MacArthur et al. (2022) define gender-transformative approaches as: (i) Motivated towards transforming norms and cultures around gender, (ii) focused on the systems which perpetuate inequalities, (iii) grounded in strategic gender interests, (iv) recognizing diverse genders, and (iv) embracing transformative methodological practices. The adoption of gender-transformative approaches, increasingly widespread in international development and climate change, will support parallel movements to decolonize (Trisos et al. 2021) and enhance recognition of multiple knowledge and values in conservation (Wyborn et al. 2021).

We conclude with three practical suggestions that may be adopted in pursuit of gender-transformative approaches to conservation. First, conservationists can become familiar with how gender relations have shaped core practices of conservation, for example, by reading a selection of papers included in this review and in masculinity studies more broadly (Gottzén et al. 2020; Reeser 2023). Conservation educators can include these papers in conservation training courses at undergraduate, postgraduate, and professional levels. Second, conservationists (and conservation organizations) can practice reflexivity with the aim of becoming more aware of how gender relations shape their work and how they might enact more equitable alternatives. Reflexivity refers to the ability to critically assess one's own assumptions and actions, and the effects these have on other people and situations (Beck et al. 2021). For example, we might ask ourselves as co-authors of this paper, does our adoption of the systematic review itself represent masculinities of control and rationalism? Moreover, does our focus on masculinities paradoxically represent a competitive (masculine) effort to gain a "critical edge" on conservation? Engaging in such critical self-questioning helps to mitigate complacency and injustice. There are several frameworks for fostering reflexivity in conservation (e.g., Beck et al. 2021) that can be combined with gender-specific tools (e.g., Jost et al. 2014). Third, conservationists can embrace the value of diverse gender expertise as a means of opening-up possibilities to do conservation differently, for example, through inter- and transdisciplinary projects. Indeed, engaging with gender expertise can reframe understandings of knowledge–action relationships altogether, away from the distanced provision of objective knowledge, towards collaborative, co-productive relationships (Wyborn et al. 2021). It is vital that all conservationists embrace a greater role in reflecting on "how we do" conservation and "how we are" conservation researchers and practitioners, without taking up space from those experiencing gender-based injustice (Caniglia and Vogel 2023). In a broader societal context of resurgent masculinist agendas and policy responses (Mellström 2023), reflecting on how masculinities operate in conservation provides an opportunity to reenact conservation as a transformative practice towards social–ecological justice.

Acknowledgments

This work was supported by a 2023 Asia Pacific Innovation Program (APIP) Basic and Applied Research Grant from the Australian National University, and a 2021 Early Career Researcher Project Grant from the Swedish Research Council for Sustainable Development (FORMAS; no. 2021-00628).

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data from this work is publicly available and archived at the Harvard Dataverse: West, Simon Patrick, Oliver Lilford, Vanessa Masterson, Emmeline Laszlo Ambjörnsson, Beau Austin, Bram Büscher, Laura-Bethia Campbell, et al. 2025. "Dataset: Masculinities in Conservation Science, Policy and Practice—A Qualitative Systematic Review." Harvard Dataverse. https://doi.org/10.7910/DVN/NGDIWU

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