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The Changing Meaning of Wild Rivers: A Review

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ABSTRACT: Environmental activism has been instrumental in the adoption of public policies to protect the last remaining free-flowing rivers. In this regard, the passage of the 1968 Wild and Scenic Rivers Act in the United States is an internationally recognised milestone. This legislation continues to inspire both other campaigns to protect wild rivers and the development of new conservation measures. The primary objective of this review is to provide a reconstruction of the trajectory of wild rivers as scientific subject matter. This approach allows us to study the processes of diffusion and adaptation of the American Wild and Scenic Rivers Act in other geographical contexts. It also aims to help us better understand the social and political effects of public policies that are geared towards the preservation of wild rivers. To this end, 106 scientific articles on wild rivers covering the period 1967 to 2024 were subjected to a lexical analysis (Step 1), a thematic analysis (Step 2) and a discussion of key issues based on an in-depth reading (Step 3). This review shows that the recreational, cultural and emotional values associated with wild rivers are increasingly being replaced in the scientific literature with the ecological values of free-flowing rivers. Furthermore, while the Wild and Scenic Rivers Act still largely guides scientific research on the subject, this review identifies the controversies underlying its adoption/adaptation in other colonial contexts where the idea of wilderness plays a key role in conservation. Underlying these conflicts is the need to rethink river conservation initiatives based on Indigenous people's ontologies.

KEYWORDS: Wild rivers, environmental movements, nature conservation policy, nature-culture ontologies

INTRODUCTION

In 2018, the United States celebrated the 50th anniversary of the enactment by Congress of the National Wild and Scenic Rivers Act (1968). The significance of this act is often downplayed, being overshadowed by the 1964 Wilderness Act, which established protected areas on the basis of ideas that were central to American culture and identity. At the beginning of the 20th century, the defence of the Tuolumne River near Yosemite Valley created a momentum that shaped the preservationist movement. The 1913 Raker Act granted San Francisco permission to build a dam in the valley to supply the city with water and power, and the fight against what became the O'Shaugnessy Dam was led by John Muir; this struggle founded the American movement to defend wild rivers. During the first part of the 20th century, rivers were integrated into protected-area projects, especially national parks. Wild rivers per se, however, were not the focus of the first river-preservation activists, such as those belonging to the Wilderness Society which was founded in 1935. Since the late 1960s, preservation of the wilderness character of rivers has become a vehicle for environmental mobilisation in its own right. The US government has been instrumental in structuring environmental advocacy for the preservation of wild rivers and the US Congress has provided the first public policy framework to address this demand, in a context of rapid hydropower development. In some countries, institutional arrangements for the protection of wild rivers were put in place early on, but over the last 10 years or so, particularly in Europe, the dynamic of valuing the wilderness character of rivers and acting to preserve it has given rise to new campaigns and new forms of labelling (Perry, 2021; Schiffman, 2022; Lawton, 2023).

Wild rivers have become an important object in the operational field of nature conservation, motivating numerous environmental mobilisations (Allardice, 2005; Vos, 2024). The rise of

environmentalism contributed to the construction of the 'wild rivers' object and, in return, this same object led to the shaping of environmentalism, particularly in the United States (Pearson, 2002; Praskievicz, 2020). Wild rivers have also been documented through the explorations of adventurers and pioneers (Morse, 1979; Huser, 2004; Powell, 1875; Sevigny, 2023), and they are a recurring literary[1] and cinematic theme.[2] This powerful historical and cultural anchoring is closely related to the colonial process, in that a powerful 'pioneer' narrative that includes the 'wildness' of the 'frontier' tends to erase the ontological attachments of Indigenous peoples (McMillin, 2011).

Despite the undeniable existence of the 'wild river' as a cultural and political object, its status in the scientific literature is more difficult to grasp. There is a vast literature on regulated rivers (Stanford and Ward, 1979) that includes the effects of dam construction, methods of ecological restoration through dam removal (Stanley and Doyle, 2003), and the restoration of environmental flows (Alexandra et al., 2023). This scholarly body of work does address the issue of wild rivers – usually by referring to their former free-flowing condition – but, in general, freshwater conservation studies do not focus explicitly on wild rivers. Various other disciplinary fields also contribute to their configuration as a hybrid scientific and applied subject. Indeed, to our knowledge no review of the literature has specifically attempted to highlight the evolution of the meanings and diversity of disciplinary treatments of wild rivers as a scientific object. That is what this paper proposes to do.

This review, more specifically, retraces the scientific trajectory of the 'wild river' object by bringing to light the definitions of, and ways of characterising, free-flowing rivers on an international scale since the late 1960s. It also aims to identify 'what wild rivers do', setting out the two main ways of dealing with wild rivers' agency. The first is to use actor network theory to highlight the effects of wild river conservation policies (Latour, 1991). How do wild rivers shape environmental movements? How do they bring these movements closer to, or take them further away from, public action? How do wild rivers act through the conservation measures that are put in place? In this context, wild rivers can be understood as hybrid actors, that is, the product of the coupling of natural and human agency. The second way of addressing the agency of wild rivers is based on the use of non-Western ontologies "whereby country – land, water, sky – is sentient: it has its own Law, people, spirit, and agency" (Slater, 2013: 772). The aim is thus to evaluate how the agency of wild rivers is understood and portrayed in the corpus of literature studied.

To address these questions, this review undertakes three progressive and complementary steps. The first step is a lexical approach which considers the abstracts of the 106 papers that make up the corpus. This initial exploratory reading will identify the lexical universes and main themes covered by the literature on wild rivers. The second step is based on a comprehensive reading of the abstracts, introductions and conclusions of all the papers, allowing for an in-depth thematic approach based on the key ideas presented in the papers. This second step also allows for a diachronic restitution of the themes identified, highlighting changes and evolution over the 1967 to 2024 period. The third and final step is based on an in-depth reading of the key articles, about 30 of the total 106. A wider range of literature is used to support the paper's discussion.

METHODOLOGY FOR ESTABLISHING THE CORPUS OF LITERATURE

The challenge of delimiting the corpus

'Wild rivers' is a powerful motif for environmental mobilisation. It plays a key historical role in the development of environmentalist rhetoric around opposition to the building of dams and movements to

[1] See Edward Abbey's fabulous *The Monkey Wrench Gang* (1975) and *Down the River with Henry Thoreau* (1980), or the work of Ron Rash entitled *Saints at the River* (2004); in a different geography, see Joseph Conrad's famous *Heart of Darkness* (1899).
[2] To name two, see Elia Kazan's *Wild River* (1960) and John Boorman's *Deliverance* (1972).

remove existing ones. Wild rivers have long been the focus of environmentalism, but mobilisations have only found political expression since the late 1960s in the specific context of the 1968 US Wild and Scenic Rivers Act (henceforth the WSRA) (Palmer, 1993, 2017). This Act led to the creation of a public policy framework, the Wild and Scenic River System (WSRS). The WSRS includes the river designation process as well as management and regulatory principles. The WSRA was passed in the wake of the 1964 Wilderness Act and the two Acts share the same founding principles of contemporary conservation policy in the United States. The WSRA and its public action framework have together served as an international model. Since the 1970s, they have been explicitly used by environmental movements and public authorities to fight dam projects and/or to establish comparable public action schemes. This American model is a milestone in terms of the preservation of wild rivers and, to take account of its influence, the review will cover the period between 1967 and 2024.

While the media, NGO publications and documentaries, and grey literature all demonstrate the existence of issues surrounding the preservation of wild rivers, the scientometric analysis of the object 'wild rivers' appears to be much more difficult. Here we encounter the same type of difficulties as those experienced by Vos (2024) when establishing his corpus on 'river defence and restoration movements'. The object and focus of the bibliographic research must be very precisely defined in order to construct a relevant corpus. An initial paradox therefore appears: while wild rivers are a major environmental issue, they do not, a priori, appear to constitute a self-evident scientific topic. The expression 'wild rivers', when used in an open query in the entire body of scholarly articles, returns a variable number of results depending on the tools used (Table 1). The query is too broad; it does not allow for an effective distinction between articles with wild rivers as their central topic and those that mention wild rivers as a contextual element. This initial search highlights the fact that the scientific literature (mainly in the geosciences, environmental sciences, and life sciences) most often considers wild rivers to be backdrop or context.

Table 1. Corpus delimitation results from bibliographic queries.

Query	Google Scholar (full text)	Google Scholar (title)	ISTEX (full text)	ISTEX (title)	Web of Science (all fields)	Web of Science (title)
Wild rivers	5100	99	341	4	60	27
Wild and scenic	13 400	196	608	9	87	31
Free-flowing rivers	7 080	67	332	3	150	33
Wild rivers AND Free-flowing rivers	306	No result	3	No result	No result	No result

Source: Author's own elaboration; Google Scholar, ISTEX and Web of Sciences.

A search strategy was defined to more effectively identify scientific articles and theses whose content is centred on the subject of wild rivers. Combined queries were used that searched for the following key phrases in the title of the article: 'wild river.s', 'free-flowing-river.s', 'wild and scenic river.s'. Two additional expressions were also used. The first, 'free-flowing rivers', is associated with the very definition of 'wild rivers' as formulated in the WSRA; the second, 'wild and scenic rivers', refers specifically to the associated system (WSRS) and its international dissemination. Other terms and expressions were tested such as 'untamed rivers' and 'pristine rivers', but the searches did not return enough results. Three bibliographic search engines were used to build the corpus: Google Scholar, ISTEX and Web of Science. These three tools made it possible to verify the references and to access most (90%) of the texts in their full version. The inclusion of texts in the corpus was conditional on the presence of an abstract, which was necessary for the exploratory textometric analysis (Step 1 of the review). The chronologically

organised corpus has few gaps, with only eight years not covered, mainly before the 1990s. A step-by-step review of the abstracts made it possible to discard articles that did not deal centrally with 'wild rivers'. Ultimately, this method enabled the selection of 106 texts, mainly articles published in peer-reviewed journals (90%), but also a few chapters of collective works (6%) and doctoral theses and monographs (4%).

Processing the corpus

In terms of analysis, the corpus was treated from three perspectives. The first (Step 1) is based on an examination of the lexicon of the 106 abstracts; this exploratory approach falls under the heading of textometry. This approach owes much to the work of colleagues in the geography department at ENS Lyon (France). On the basis of contributions and interactions with specialists in lexical analysis (Ratinaud and Marchand, 2015; Pincemin, 2020, 2022), they convincingly adapted its use renewing the understanding of spatio-temporal dynamics (Comby, 2013; Comby et al., 2016; Comby and Le Lay, 2019; Boyer et al., 2021). Step 2 is based on a comprehensive reading of the abstracts, introductions and conclusions of the papers. This made possible the association of each article with two levels of thematic classification, which are presented in detail below. In the third and final step, the analyses and discussion were deepened by a full reading of the key texts in the corpus (about 50). In the discussions taking place at this step, the contributions of the corpus were contextualised by occasionally drawing on fundamental contributions whose theme was more all-encompassing or on papers that had not been harvested in the main corpus.

On the technical side, we used three different tools to carry out the processing, the results of which are formalised in the form of tables and computer graphics. We used the free lexical analysis software Iramuteq[3] and TXM.[4] We also used the open-access Cortext Manager platform,[5] which facilitates more appropriate use of thematic analysis. The thematic analysis performed with Cortext Manager is based on 14 variables that document each article in the corpus.[6]

STEP 1: EXPLORATORY TEXTOMETRIC ANALYSIS

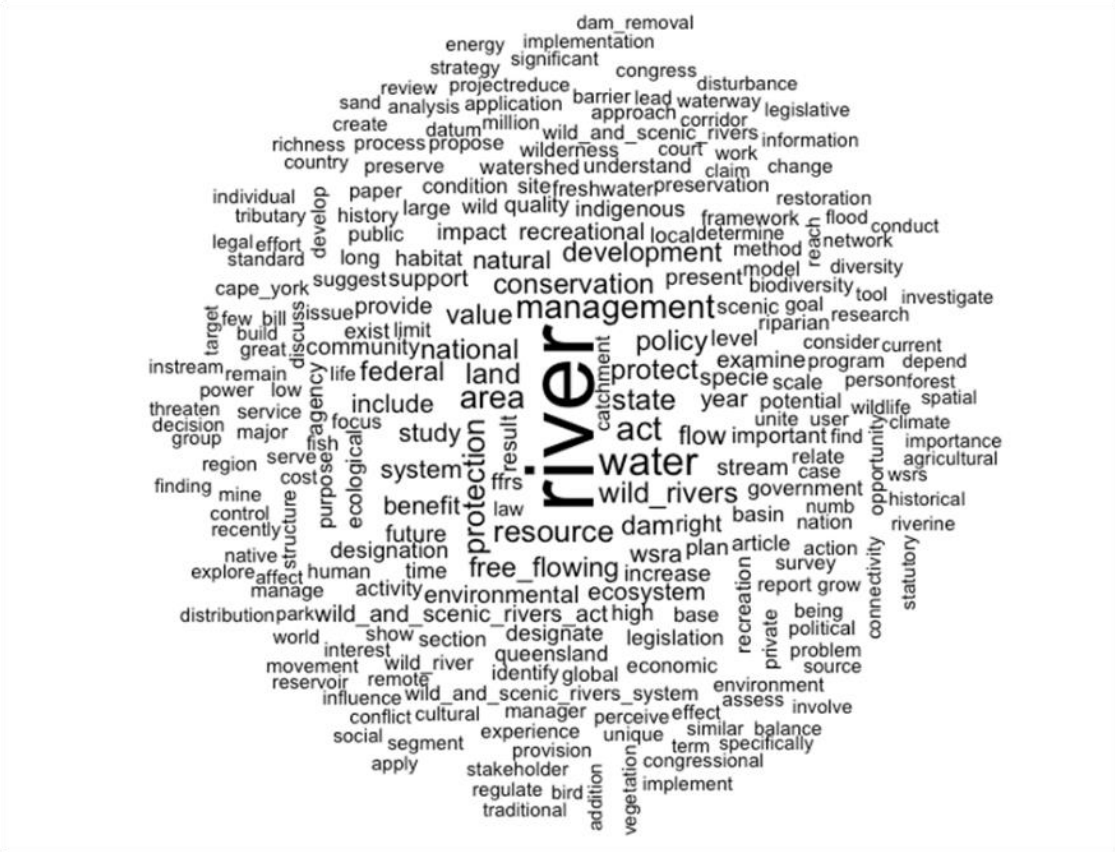
Lexical description of the corpus

This first step of the analysis is based on a lexical description of the abstracts of the scientific publications that make up the corpus. The 106 abstracts thus constitute a sub-corpus that is modest in size but sufficient for this initial exploratory approach. The average length of the abstracts is 232 words. Figure 1 gives an overview of the most frequent active forms (words) in the corpus. This first level of description reveals the significant weight of the vocabulary of public action in the corpus. More specifically, the definition of the 'concept' of 'wild river' has been strongly influenced by the US WSRA and related scientific publications. Beyond that, the most frequent vocabulary items reflect a diversity of angles of approach or issues associated with wild rivers. We thus see the emergence of usage values linked to recreational activities, as well as the language associated with laws and procedures. The field of economic and social values also appears, associated with the use of terms such as 'resource', 'benefit' and 'services'. The topic of conflict (of use or value) is present, although it seems to be of secondary importance. On this

[3] For a detailed presentation, see http://iramuteq.org/
[4] For a detailed presentation, see https://txm.gitpages.huma-num.fr/textometrie/
[5] For a detailed presentation, see https://www.cortext.net/
[6] These native variables are: the identifier of the article, the title, the year of publication, the authors, the title of the journal or book, the administrative address of the first author (broken down into city, country, institution), the scientific discipline, the scientific field (ERC categories), the thematic categorisation of the articles into two levels, the query that was used to collect the article, and the full abstract of the article. Finally, Cortext Manager software allowed additional variables to be added (lexical extraction of simple terms, complex noun-phrase–type terms, and named entities).

point, a more in-depth knowledge of the corpus will enable this statement to be qualified, which demonstrates the limits of a formal lexical approach that is not combined with other forms of text treatment. A more detailed qualitative and chronological scientometric analysis will be presented in the following section (Step 2: Comprehensive reading of the corpus).

Figure 1. Corpus wordcloud – active forms, frequency ≥ 10.



Source: Author's own elaboration – Iramuteq V07 alpha2.

The lexical and thematic universes covered by the corpus

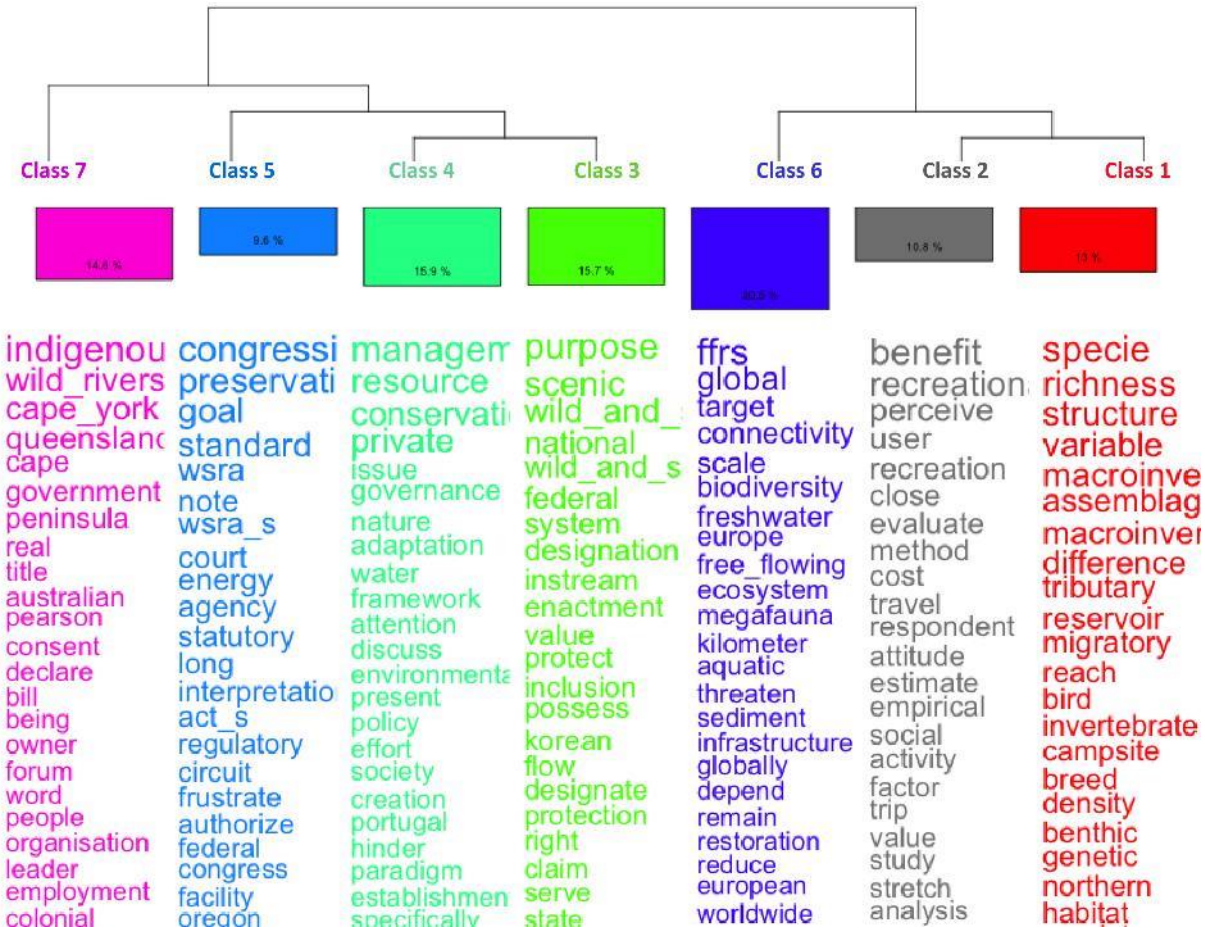
The Iramuteq software allows this lexical approach to be explored in greater depth using Descending Hierarchical Classification (DHC), also known as Reinert's Classification. This method, applied to the whole lexical table, can be used on the texts that make up a corpus, on segments of texts, or even on groupings of text segments.[7] Without going into a detailed explanation of the algorithm of the Reinert's method, as adapted in the Iramuteq software, the reader should bear in mind that the distribution of classes is based on a prior division of the corpus into segments whose size is, by default, 40 occurrences. On this basis, the terms (active forms, lemmatised) are grouped via a DHC that values the criteria of similarity inside each class (frequencies, co-occurrences) and dissimilarity between classes. The method, when applied to the sub-corpus of 'wild rivers' abstracts, partitions terms into seven classes. By reading the representative lexicon of each class and the associated statistical information, it is possible to define the lexical universes

[7] The standard parameterisation of the DHC has been slightly adjusted. In order to produce a sufficiently robust and interpretable classification, we have increased the number of terminal classes from 10 to 12. To find out more about the parameterisation of the DHC, see http://www.iramuteq.org.

specific to these classes. The following lexical universes were identified: the economic value of wild rivers linked to their recreational use (Class 2); the ecological characterisation of wild rivers (Class 1); free-flowing rivers and biodiversity (Class 6); and the controversy in Queensland, Australia (Class 7). The last three lexical universes all relate to the context of the WSRA: management issues and interaction between public actors (Class 4); designation of wild rivers, evaluation and development of WSRS (Class 3); difficulties in implementing the WSRS (Class 5). To illustrate the detailed interpretation of each class, two different figures are used.

The first illustration (Figure 2) takes the form of a diagram, called a dendrogram in Iramuteq. This diagram allows us to visualise the process of partitioning into classes and to identify the most characteristic lexicon of each one. The relative weight of each class in the corpus is expressed as a percentage; specifically, the value refers to the percentage of text segments integrated into the class. Lexical universes are defined on the basis of these two figures, but also using more precise information on the semantic profile of each class (accessible via the profiles tab of the DHC result).

Figure 2. From the vocabulary to the themes – Diagram produced by Reinert's method (DHC).



Source: Author's own elaboration – Iramuteq V07 alpha2.

In detail, Class 2 (10.8%) brings together terms dealing with the economic dimension associated with the recreational use of wild rivers, essentially in the context of the WSRA. The experiential register, particularly those terms based on the nautical practices of whitewater, is also closely linked to the origins of the wild river conservation movement (Craighead, 1957; Palmer, 1993, 2004). The intrinsic value of this wilderness experience is linked to the economic valuation of different uses, including water sports,

sport fishing and hiking. In keeping with the spirit of the 1964 Wilderness Act, these 'wild experiences' contributing to American identity are seen, in the American context, as a way of testing oneself against, and passing on, the wilderness to future generations. Several key terms in Class 2 also refer to the limits and regulations governing the development of these activities, such as 'carrying capacity'.

Class 1 (13%) includes terms related to the ecological characterisation of wild rivers, in particular through the inventory of macroinvertebrates, birds and fish. The ecological characterisation of these watercourses is also based on the study of riparian vegetation or on the diversity and dynamics of sandy deposits. On this last point, part of the class vocabulary raises the question of the vulnerability of these sandbanks in the context of the development of recreational activities (this is related to the theme of the regulation of these uses; cf. Class 2, described above).

Class 6 (20.5%) is centred around 'free-flowing rivers' and its acronym (FFRs). Its vocabulary refers very clearly to the contemporary issues of restoring and preserving the biodiversity of the last undeveloped rivers, or at least of those whose flow has not been altered by the construction of large dams. We therefore find here the key term of hydromorphology, which explores the field of ecological continuity: connectivity, fragmentation, sediments, dams, barriers, thresholds, etc. This class also reveals a geographical shift in the issues at stake, since the American context seems to be fading in favour of Europe (Europe, European) and the global scale (global).

Class 7 (14.6%) is dominated by terms associated with the controversy generated by the implementation of the Wild Rivers Bill, which was enacted in 2005 by the parliament of Queensland, Australia.[8] Without going into the details of this controversy here, we note the strong presence of geographical markers associated with this conflict, including the levels of institutional organisation (Australia, Queensland, and Cape York Peninsula). The class lexicon allows for the identification of the key players in the controversy (Pearson, Abbott, owners, Indigenous people, and government). The term 'Indigenous' is very specific to Class 7, with 22 out of 24 occurrences in the corpus. The political nature of the controversy is suggested by the presence of the terms: declare/declaration, consent, bill, leader, debate, forum. In addition, the class clearly represents terms associated with indigenousness such as 'traditional/tradition' and 'native' (50% of occurrences in the corpus) or even 'Aborigines' (more discreet, but quite specific to the class, 2 out of 3 occurrences in the corpus). This strong emphasis on the Indigenous people issue resonates with the evocation of a colonial context (colonial, 4/4 occurrences). Finally, the class significantly incorporates vocabulary relating to land issues (owner, title, titleholders) and economic issues (economy, employment).

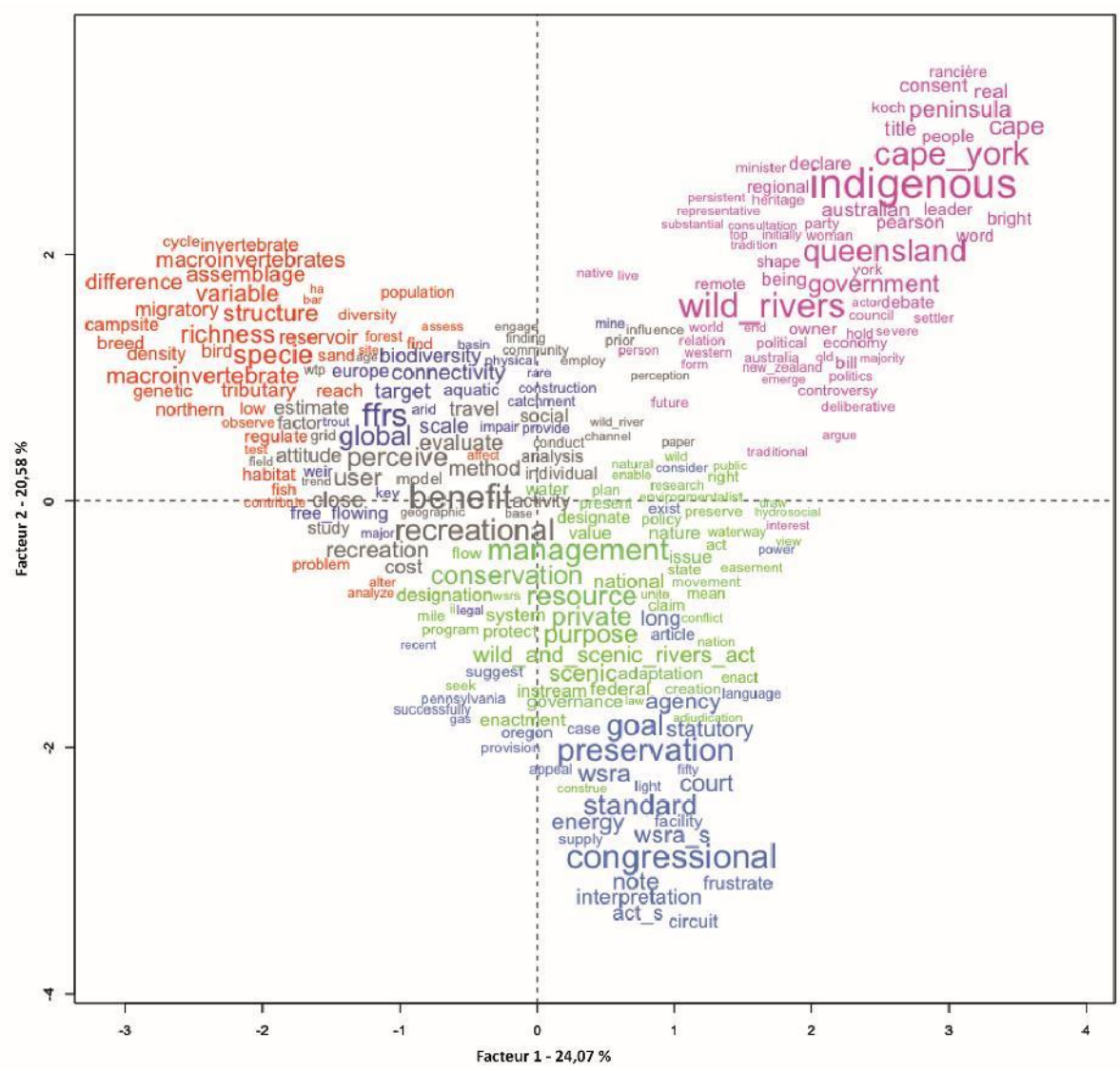
The last three classes cover, from three complementary perspectives, the measures for the preservation of wild rivers. Here, the weight of the American context is still very significant, as most of the institutional and geographical labels are specific to it. Class 4 (15.9%) includes terms related to the management and interaction of actors in public water management policy in United States. The WSRS mechanism is dealt with from the angle of adjustments to the law and implementation procedures. The vocabulary of the class also highlights the issues at stake in the coordination between public and private actors in the conservation of wild rivers. Class 3 (15.7%) provides an account of the procedure for designating wild rivers within the WSRS. The glossary also refers to the dynamics of this system and its evaluation. Finally, Class 5 (9.6%) brings together terms that evoke the difficulties of implementing this system linked to procedural complexity or the confrontation of preservation and development issues. On this last level, the development of hydroelectricity seems to be emerging (energy, 6/7 occurrences).

The second illustration (Figure 3) projects the result of Reinert's classification on a factorial plane (Correspondence Factor Analysis, or CFA). The first two axes of the Correspondence Factor Analysis explain 44.6% of the cloud's inertia (F1, 24.1% and F2, 20.6%). This result allows for an interpretation, but its relative lack of statistical robustness will require a certain degree of caution in the presentation of

[8] Referred to by commentators as the "Queensland or Cape York controversy".

the results. This makes the implementation of complementary analysis methods even more necessary (see the next two sections). Axis 1 structures the classes around the broad theme of wild river management measures (Classes 3, 4, 5 and to some extent 7). Axis 2 organises classes around the issues relating to the preservation of wild rivers: ecological characteristics (Class 1), protection and threats to free-flowing rivers (Class 6), economic value and social perceptions of wild rivers (Class 2). Finally, at the end of this same axis, Class 7 clearly groups together terms relating to the Queensland/Cape York controversy.

Figure 3. From the vocabulary to the themes – Factorial projection of the classes produced by Reinert's method (DHC).



Source: Author's own elaboration – Iramuteq V07 alpha2.

STEP 2: COMPREHENSIVE READING OF THE CORPUS

This initial approach to the corpus based on lexical analysis (Step 1) can be consolidated with a comprehensive reading (Step 2). The first step was based on the lexicon and the text segment, while the

second step uses the text (abstract, introduction and conclusion) as a basic unit and focuses on the meaning of the sentences that make it up. Lexical analysis will be used as a support and as an effective means of exploring the texts and illustrating the thematic analysis. Careful reading enabled the development of a two-level thematic classification. The first level consists of 6 topics and the second of 14 subtopics (this thematic classification is presented in full in Table 2). The DHC was used as a reading grid for the texts. This comprehensive reading confirms and clarifies the results of the DHC relatively well in terms of the main identified themes. The modest number and volume of texts in the corpus gave the initial textual analysis a useful exploratory dimension. However, this was not sufficient to develop a precise and critical interpretation of the corpus. Comprehensive reading makes it possible to highlight elements that are invisible when using only the statistical method. Weak signals and emerging themes can be better characterised during this second step of the review. Thus, the second level of classification resulting from the comprehensive reading makes it possible to avoid the corpus being dominated by cases in the United States. A specific class can be designated that groups together all the non-American experiences, even though, in most cases, they evoke the WSRA model. The second level of classification offers a clear distinction between institutional conservation measures and initiatives undertaken by NGOs. The topic of controversy is also much better characterised; moreover, although still dominated by the Queensland case, the topic includes other areas in which the preservation of wild rivers has given rise to conflict.

Table 2. Two-level classification resulting from a comprehensive reading of the corpus.

The 6 main topics [number of papers]	The 14 subtopics (number of papers)
1. Recreation [15]	1.1 Recreational value [7]
	1.2 Recreational activities environmental impacts [8]
2. Wild and Scenic Rivers System (WSRS) [31]	2.1 WSRS actors [11]
	2.2 WSRS scenic values [2]
	2.3 WSRS implementation [18]
3. Wild rivers and the ecology of free-flowing rivers [29]	3.1 Wild rivers ecological assets [12]
	3.2 Wild rivers mapping and environmental assessment [5]
	3.3 Free-flowing rivers ecological restoration [6]
	3.4 Free-flowing rivers ecosystems services [6]
4. Wild rivers preservation outside the United States [11]	4.1 National framework [7]
	4.2 Initiatives/campaigns led by NGOs [4]
5. Wild rivers and identity [6]	5.1 Wild rivers and identity [6]
6. Wild rivers controversies [14]	6.1 Wild Rivers Bill (Queensland/Cape York) [9]
	6.2 Preservation versus development [5]

Source: Author's own elaboration.

Scientometric description of the corpus

The corpus integrates the contributions of 23 scientific disciplines that we have grouped into 8 categories using the nomenclature established by the European Research Council (ERC). It is ERC categorisation that has been adopted for analysing scientific contributions to knowledge of wild rivers, as presented in detail in Table 4. In order to simplify the analysis and to better contrast the contributions from the human and

social sciences with other approaches that are better represented in the field of nature conservation, it was decided to merge the ERC Science & Technology and Life & Health categories. Note that, depending on their actual content, some articles belonging to the same disciplines in the corpus may have been assigned to different ERC categories and disciplines. This is the case, for example, for articles written by specialists in outdoor and recreation studies.

Table 3. Correspondence between the disciplines listed in the corpus and the European Research Council's field/disciplines classification.

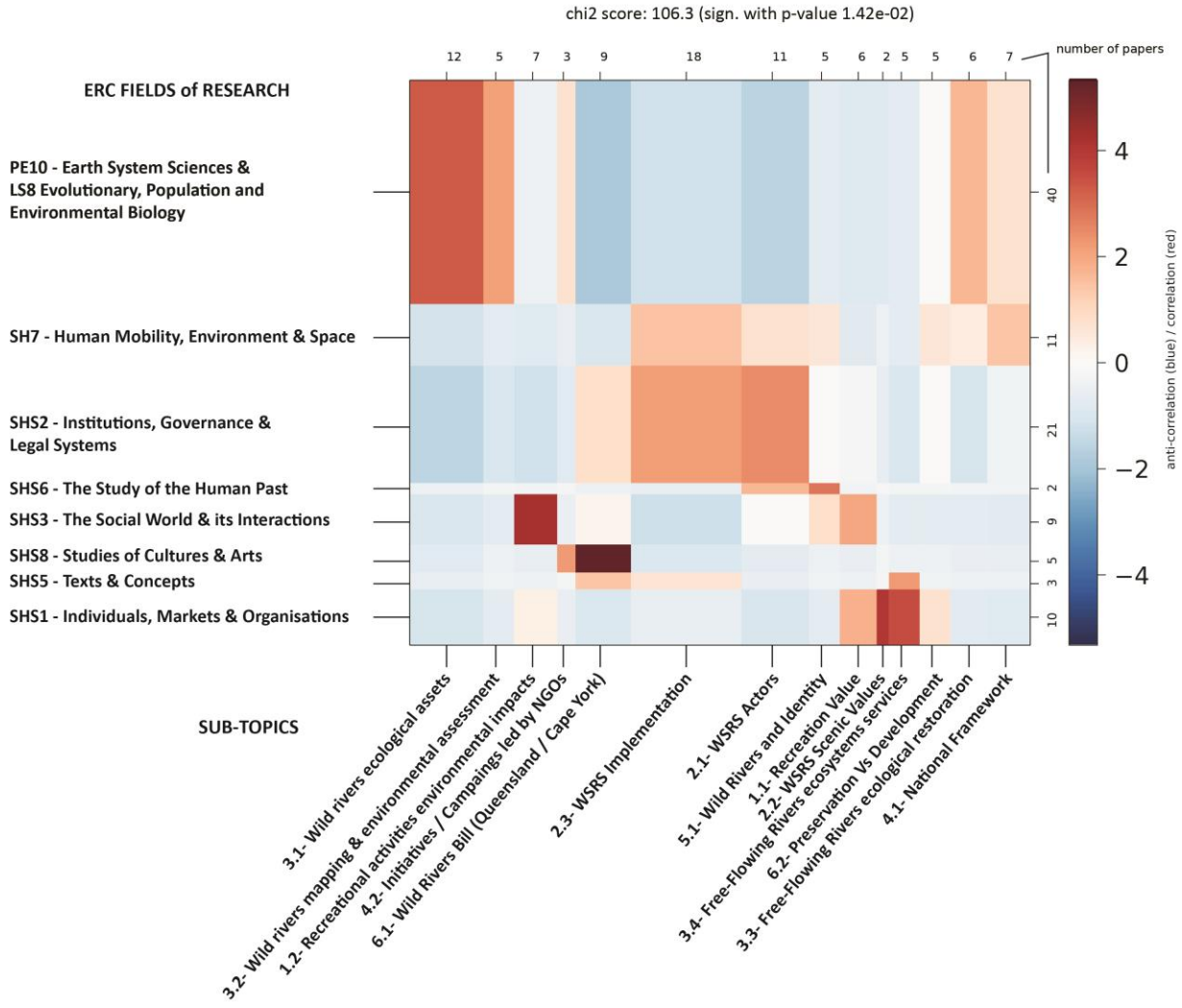
Corpus scientific disciplines	ERC fields of research	ERC disciplines represented in corpus
	Humanities and Social Sciences	
Economics, outdoor and recreation studies	Social Sciences and Humanities 1 (SH1) Individuals, markets and organisations	Microeconomics, behavioural economics, econometrics, statistical methods
Law, political sciences	SH2 Institutions, governance and legal systems	Law, political sciences, political systems and institutions, governance
Outdoor and recreation studies, psychology, sociology	SH3 The social world and its interactions	Psychology, sociology
Philosophy	SH5 Texts and concepts	Philosophy
History	SH6 The study of the human past	Archaeology and history
Environmental engineering, environmental management, geography, landscape architecture, political ecology, regional resources planning	SH7 Human mobility, environment and space	Human geography, sustainability sciences, regional planning, spatial analysis/mapping
Anthropology, cultural studies	SH8 Studies of cultures and arts	Anthropology, cultural studies
	Science & Technology & Life & Health	
Nature conservation, water resources, biology, ecology, forestry, physical geography (hydromorphology, hydrology), geology	PE10 Earth system science & LS8 Environmental biology, ecology and evolution	Terrestrial ecology, land cover change, geology, physical geography, hydrology, water and soil pollution and biodiversity, conservation biology

Source: Author's own elaboration – European Council Research.

A contingency matrix (Cortext Manager) allows visualisation of the contributions of each of the ERC categories to the 14 subtopics covered by the texts that make up the corpus. In terms of discipline, 19% of the texts relate to legal sciences and 19% come from the operational field of nature conservation (19%). This is followed by the contributions of fundamental ecology (11%), economics (10%), geography (10%), anthropology (5%) and sociology (5%). All the other disciplines contribute less than 5% each to the composition of the corpus (that is, political sciences, philosophy and psychology, history, outdoor and recreation studies). In total, approximately 40% of the articles in the corpus are rooted in the field of earth system sciences (PE10, including ecology, geology, physical geography, and natural resource

management). In other words, scientific production focusing on wild rivers remains relatively well covered by a variety of disciplines in the humanities and social sciences.

Figure 4. Contingency matrix enabling the contributions of each scientific field to be evaluated.



Source: Author's own elaboration – Cortext Manager V2.

Note: The figure shows 14 subtopics developed through a comprehensive reading of the abstracts, introductions and conclusions of the articles included in the corpus; reading: "The contingency matrix shows the degree of correlation between any pair of items. Red cells are the most correlated; blue ones are anti-correlated; white cells do not feature any correlation" (Cortext Manager online documentation).

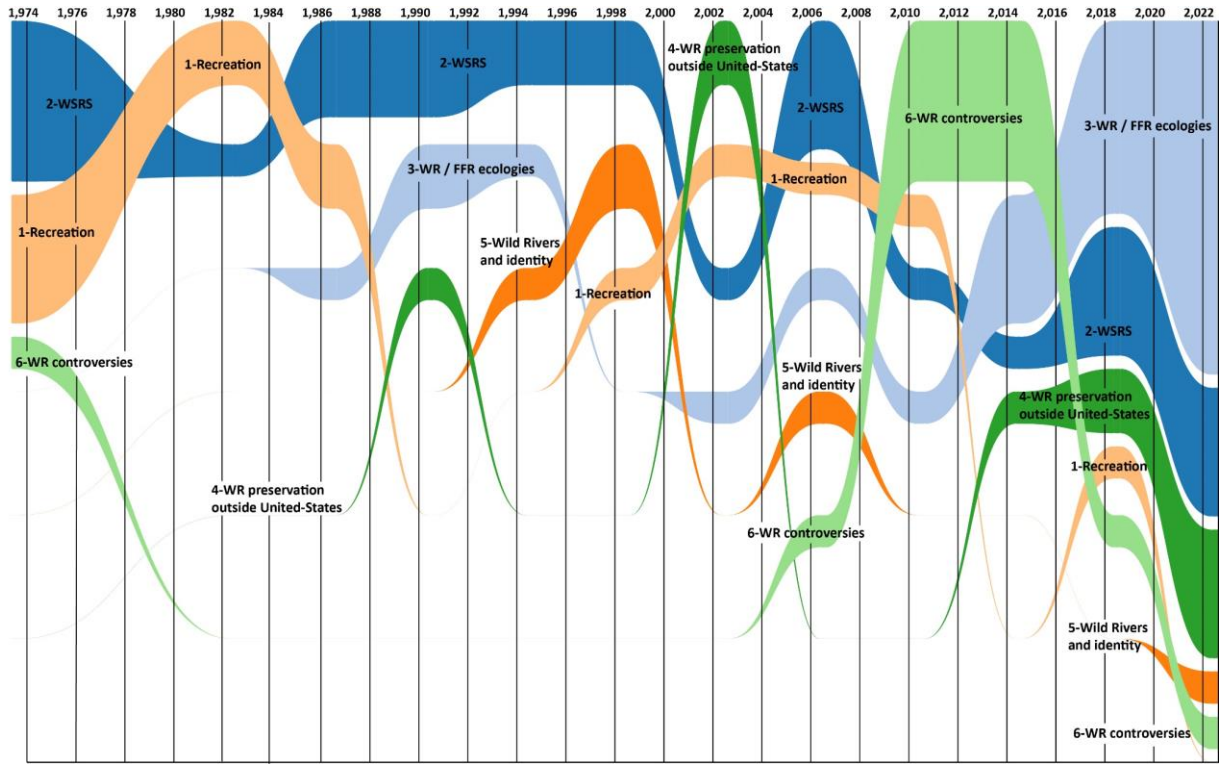
SHS2 (law, political science), for example, focuses mainly on the methods of implementation and the interaction of WSRS actors; this also addresses the sub-theme of the Queensland controversy, which is most intensively dealt with by anthropology and cultural studies (SH8). Economics is clearly mobilised for the contingent valuation studies applied to wild rivers. The aim, more generally, is to demonstrate the value of wilderness compared to the value of river development, especially hydropower. Economic valuation is also associated with highlighting the ecosystem services of free-flowing rivers, particularly in the European context. Sociology and psychology examine both the experiential dimension of the relationship with wild rivers (user preferences and attitudes, individual and community values) and the impact of recreational activities (assessment of carrying capacity, methods of regulation between uses).

Human geography (SHS7) is one of the disciplines that cover the widest range of issues. It is particularly concerned with the cartographic identification (and in some ways definition) of wild rivers, but also with the implementation of the WSRS, conflicts and controversies, ontological relationships with wild rivers, and the challenges of restoring river continuity.

Analysis of the temporal dynamics of the themes covered by the corpus

The Cortext Manager platform also allows for the use of algorithmic processing that graphically presents the temporal dynamics of the themes covered in the corpus. Here again, the two thematic categorisations of the articles resulting from the comprehensive reading are used. Figure 5 illustrates the evolution of themes according to the most general categorisation (6 topics). The diachronic analysis demonstrates a progressive diversification of approaches. Unsurprisingly, the weight of the WSRS system is very strong following the promulgation of the 1968 WSRA. Three related themes then guided scientific production until the early 1980s: 1) the public action mechanism associated with the WSRA; 2) the evaluation of the benefits and impacts of recreational uses on the environmental and economic levels; and 3) the confrontation between the development and preservation of free-flowing rivers. The theme of international dissemination and the adaptation of the American model to other geographical contexts appears in the corpus from the mid-1980s onwards. It gives rise to sporadic productions (1990-1991, 2000-2002) before establishing itself as a major theme from 2014 onwards. The WSRS theme remains central but faces competition from the treatment of other national or regional measures. In the latter case, the controversy surrounding Queensland's 2005 Wild Rivers Bill clearly dominates the 2010-2015 sequence. Finally, at this level of interpretation, the theme of ecological characteristics that emerged in the early 1980s is seen to develop strongly after 2010 and to dominate after 2016.

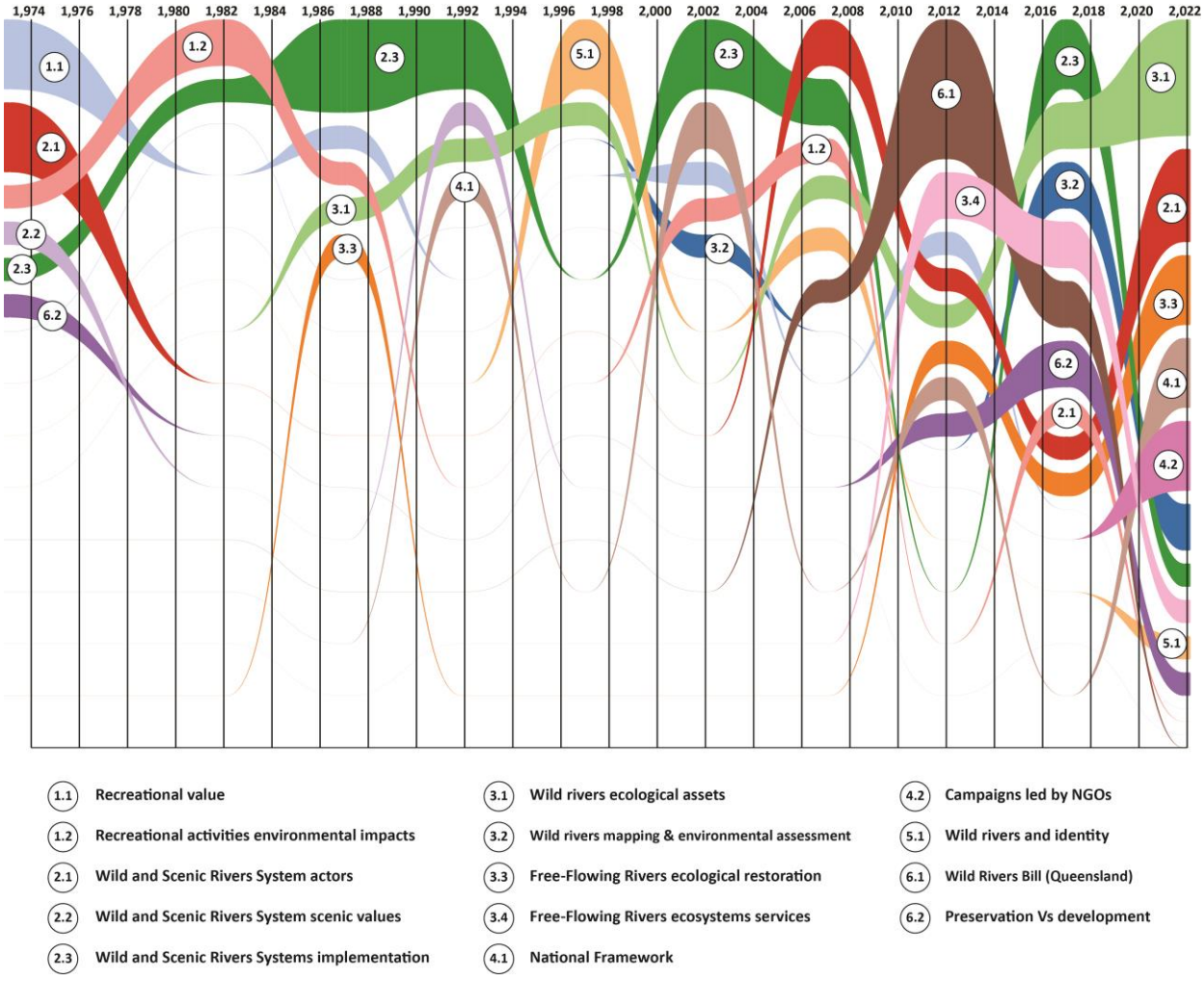
Figure 5. Diagram showing the evolution of the thematic treatment (the six main thematic categories) of wild rivers in the corpus for the period 1974-2022.



Source: Author's own elaboration – Cortext Manager V2.

Figure 6 provides a more detailed analysis (14 sub-themes), divided into three sequences. The first (1960-1980) is strongly influenced by the WSRS. Contributions on the environmental impact of recreational activities increase rapidly. The authors question the regulation of water flows, the nature of water sports, and their marketing methods. They also discuss raising users' awareness of the sensitivity of the environment. This first sequence shows a growing interest in monitoring and adjusting the concrete implementation of the WSRS system. Its novelty calls for research into the coordination of private and public actors; however this theme seems to die out at the beginning of the 1980s. The landscape aspect of the WSRS scheme seems to attract very little interest compared to the semantic pairing of wild rivers with free-flowing rivers (this will be dealt with in more detail at the beginning of Step 3 of the review).

Figure 6. Diagram showing the evolution of the thematic treatment (14 sub-themes) of wild rivers in the corpus for the period 1974-2022.



Source: Author's own elaboration – Cortext Manager V2.

The second sequence covers the 1980s and 1990s. It is characterised by publications that mainly document the evolution of the WSRS. This sequence, however, is also characterised by the emergence of numerous sub-themes including, as previously mentioned, ecological characterisation, but also individual and community relationships with wild rivers, the creation of new preservation measures (in New Zealand, for example), or even the cartographic identification of wild rivers.

The third and last sequence (2000-2024) shows a powerful process of diversification and interweaving of issues. The sub-theme of ecological characterisation is complemented by that of ecological restoration. It is no longer just a question of preserving the last wild rivers but of restoring free-flowing rivers by dismantling dams and weirs. There is also a revival of the theme of the economic evaluation of wild rivers through the mobilisation of the rhetoric of ecosystem services. The invention of new preservation measures, still taking the American WSRS as a model, is gaining ground on various continents including South America, Asia, and particularly Europe. While European law is mentioned as a lever for reconsidering the impact of thresholds and dams on ecological continuity, NGOs seem to play a decisive role in the implementation of preservation initiatives based on the provision of a wilderness certificate by specialist NGOs. This kind of labelling allows for integration into a 'Wild Rivers' network. (France, Europe, via the European River Network). The eastern fringes of Europe are a major focus of investment for these NGOs (including Patagonia, the World Wildlife Fund, and Balkan River Defence). Their mobilisation led to the creation in Albania, in 2024, of the first 'wild river national park' on the European continent. At the end of the sequence, we see the reappearance of the controversy between preservation and development that provided the breeding ground for the development of the WSRS in 1968. Thus wild rivers, despite the drastic reduction in their number, are still threatened, particularly by the development of hydroelectric programmes (ref. Portugal, Balkans).

STEP 3: IN-DEPTH READING OF THE CORPUS: DISCUSSION OF KEY IDEAS AND KEY PAPERS

The third step of this review is based on an in-depth reading of the corpus using two combined approaches. The first is based on the pursuit of lexical exploration by mobilising the TXM application and in particular the concordance and progression functions that make it possible to contextualise the use of certain key terms such as 'wild river' and 'free-flowing', and to evaluate the temporal dynamics of their use in the studied corpus.

The American model of wild river conservation: Foundations and implementation

As previously demonstrated, the definition of the scientific concept of 'wild rivers' has been significantly and enduringly shaped by the Wild and Scenic Rivers Act, which was adopted by the US Congress in 1968, leading to the establishment of the Wild and Scenic Rivers System. The configuration of this system has itself been strongly influenced by the American concept of wilderness. In this context, the wild river is an essential component of the experiential dimension of the relationship with wilderness. This experience of wilderness is mainly based on a physical and emotional commitment through the nautical (canoeing, kayaking, whitewater rafting) and fishing use of these wild rivers. This relationship with wilderness is also seen as a major factor in the individuation and consolidation of the feeling of belonging to a community or adherence to a national history. This culture of wilderness is itself caught up in the colonial experience of the 'frontier' (Duban, 2008; Hine et al., 2017; Shah and Rodina, 2018). This connection raises the question of the place of Indigenous peoples and the consideration of their ontology. This question is specifically addressed later in the text (see the section entitled 'Otherness relations and colonial controversies').

The WSRA distinguishes three forms of integration into the system. The first emphasises the wild character of the river and its valley, the second focuses on landscape value, and the third on recreational value (Carter, 1967; Tarlock, 1967; Tarlock and Tippy, 1970, Roggenbuck, 2004). The most demanding level of classification is that of wild rivers (areas) that is, "Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America" (Public Law[9] 590-542:

[9] The full text of the Wild and Scenic Rivers Act (Public Law 590-542) is available here: https://www.rivers.gov/sites/rivers/files/2022-10/Public%20Law%2090-542.pdf

907). As in the Wilderness Act, the 'primitive' character probably refers to a river's precolonial condition, as suggested by Cole (2000c: 77), who refers here to the influence of the 1963 Starker Leopold Report on national parks. This reference to a primitive America thus anchors wild rivers in the situated context of American history. The preservation of wild rivers is in a sense an echo of the pioneer frontier. The foundations of preservation carry with them the imaginary of the adventures of exploration and conquest. Whitewater sports are one of the ways in which Americans connect with this mythologised history.

The jurist Goodell (1978: 43) perfectly illustrates this idea in the introduction to his article proposing an assessment of the implementation of the WSRS 10 years after its promulgation. As Goodell puts it, "The great rivers of this country represent vestiges of a frontier America where waterways were the highways to exploration and development". Wild rivers are therefore closely linked to the definition of wilderness and the feeling of wildness. Cole (2000c) brilliantly highlighted the operationally problematic (but intellectually very rich) articulation of the three semantic pivots that orient the conception of wilderness as set out in the 1964 Wilderness Act: primeval, natural condition, untrammelled. Section 1, paragraph (b), of the Wild and Scenic Rivers Act illustrates this relationship with the Wilderness Act and summarises the purpose of the WRSA mechanism and the basis for identifying the rivers concerned:

> It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfil other vital national conservation purposes (Public Law 590-542: 906).

The heritage value of the rivers covered by the WSRA is guaranteed by the preservation of free-flowing conditions, in other words by the absence of dams and any other actions leading to the alteration of the hydrological regime (see Section 15, subparagraph (b) of the WSRA). The aesthetic dimension is ultimately quite weak in the corpus analysed; however, scenic value has played a key role in the designation of numerous wild rivers (Perry, 2017a). Recreational values, on the other hand, are the subject of numerous articles. The articulation of wild and recreational values has, in a way, integrated and digested the aesthetic dimension (scenic beauty). In the 1960s, the link between beauty and recreation often served as the basis for arguments in favour of wilderness preservation. It can be found in Douglas's seminal 1965 book *A Wilderness Bill of Rights* and in President Johnson's State of the Union Message of 4 January 1965, which opens the same book.

John J. Craighead, the most influential naturalist in the intellectual preparation of the WSRS, did not initially choose to put forward a strictly ecological argument. It is therefore revealing to refer to Craighead's letter published in 1957 in Montana Wildlife Magazine (not in the corpus). In this text, he first defends the preservation of the recreational experience of which wild rivers are the medium.[10] He associates it with a very strong educational and identity value (Craighead, 1957: 16-17), saying that,

> Any outdoor pursuit which brings a man into intimate contact with natural scenery, natural forces and the unaltered web of life is highly educational. The right to experience this should be as inalienable as freedom of worship. (…). It is my belief that we should strive to keep intact some wild rivers on the basis that they are essential to our way of life.

[10] In 1970, Craighead would once again present his personal experience of whitewater rafting as a way of promoting its preservation (in a TV report, and in *National Geographic,* Issue 137-2).

Craighead's rhetoric undoubtedly incorporates a strategic dimension because he knows that naturalistic argumentation, in the strict sense of the term, is weak in the decision-making process, which is largely based on the cost-benefit studies of the Bureau of Reclamation (Tarlock and Typpy, 1970). Even at the end of the 1970s, the environmentalists involved in the controversy over the development of the New River (North Carolina) chose not to base their movement solely on ecological arguments (DiSanto, 1978; Goodell, 1978; Schoenbaum, 1979). Moreover, the identity dimension is a major element in the narrative of wild rivers; indeed, this rhetorical motif is found very consistently (Nash, 1972; Palmer, 1994; Bonham, 2000). In a second stage, Craighead also advances an ecological argument that finely demonstrates the links between the preservation of fish species and habitats, but also of, for example, the grizzly, based on the case of Montana and the Middle Fork River. More specifically, Craighead's main contribution is based on the idea of widening the scope of conservation; he argues that preserving wild rivers depends on the good ecological status of the watersheds. One is struck by the proximity of Craighead's words to those of Aldo Leopold, who published *A Sand County Almanac* in 1949. Craighead defends the same principles here as those of the Land Ethic: it would be appropriate to think like a river, in the same way that Leopold invited us to "think like a mountain". In other words, the concept of wild rivers in this American context is also linked to the emergence of a new form of environmental ethics. In this letter Craighead also foreshadows, on the scale of Montana, a system for identifying and classifying rivers into four categories that are very similar to the three categories adopted by the WSRA some 10 years later.

The WSRA is also intended to counterbalance hydraulic development programmes (Tippy, 1968; Michalson and Hamilton, 1975) and, in general, the corpus shows a fairly clear commitment by the scientific community to this objective. Outside the corpus, the environmental historian and wilderness specialist Nash (1972) even calls for a paradigm shift, inviting politicians to place the burden of proof for the overall benefits of river development on project proponents. The strategic rebalancing pursued by the WSRA is based on a selective and evolutionary approach. While preliminary studies have identified more than 650 rivers (Goodell, 1978), when the law was enacted the legislature included only 8, while identifying 27 additional rivers as candidates for future designation. Note that the WSRS proposes three levels of integration: wild rivers, scenic rivers and recreational rivers. The authors interpret the political foundations of the WSRS without excessive naivety. The scheme was also intended to relegitimise public action in the management of water resources in the face of the rise of local protests and new forms of environmental mobilisation (Tarlock, 1967; Praskievicz, 2020; Vos, 2024). In the corpus, articles offer extensive reviews of the WSRS, often around anniversary dates (particularly 1998, 2008 and 2018). The difficult implementation of the WSRS is a salient feature of the corpus. In general, each review recognises the interest and limitations of this framework (Goodell, 1978; Hiser, 1988; Becker, 1989; Cole, 2000a and 2000b; Jennings, 2008; Perry, 2017a; Fredrickson and Mott Lacroix, 2017; Dant, 2019; Blumm and Yoklic, 2020). With regard to its overall effectiveness in counterbalancing planning policy, the nuanced assessment made by its authors is summarised in the official presentation of the WSRS:

> Through 2023, the National System protects 13,467 miles of 228 rivers in 41 states and the Commonwealth of Puerto Rico; this is less than one half of one percent of the nation's rivers. By comparison, more than 75,000 large dams across the country have modified at least 600,000 miles, or about 17%, of American rivers (possibly more than 20% – figures are best estimates).[11]

The mapping of rivers[12] included in the WSRS is also striking: the west is relatively well represented and the east secondarily, but a very large central part remains under-invested in by this preservation tool (Perry, 2017b).

[11] This quote is taken from the official presentation of the national Wild and Scenic Rivers System (https://www.rivers.gov/about).

[12] Perry (2017a) proposes a map of rivers integrated into the WSRS, and a more recent and more precise official version is also available here: https://www.rivers.gov/sites/rivers/files/2023-07/national-map.pdf

In addition to the low and uneven coverage rate of the network, there are questions about its effectiveness in combating the erosion of biodiversity. Rothlisberger et al. (2017) thus provide an assessment of the ecological contributions and limitations of the WSRS. For these last authors, wild rivers are vulnerable because of the very limited protection offered by the designation of segments, upstream and downstream of which the processes of artificialisation are not controlled (that is, modification of flows, introduction of non-native and/or invasive species, degradation of water quality, etc). They also highlight the system's inability to address conservation issues at the watershed level. The ecological dependence of the river on what happens at the watershed scale (and no longer just at the scale of the river corridor), as envisaged by Craighead as early as 1957, has therefore not been recognised, and thus nor has it influenced the implementation of programmes (Tarlock, 2008). The factors behind this failure that are identified in the literature include: lack of political will (Perry, 2017a), procedural complexity (Goodell, 1978), and lack of coordination between stakeholders at the watershed level. According to Blumm and Yoklic (2020), the coordination of actors at this level is made possible by the WSRA, but it is not sufficiently guided and stimulated. The WSRA designation process involves not only procedural coordination, but also – and above all – political coordination between the state concerned and the federal level (agencies, Congress) (Burse, 2008; Koshere, 2008). The lack of political alignment of interests and powers at different levels (from local to federal) concerning the designation or management of wild rivers is fuelling an impressive body of case law, as demonstrated by Bonham (2000) based on the case of Oregon, and by Krienitz and Damon (2010) based on the case of Minnesota. According to Tarlock (2008), conflicts between agencies (particularly the Interior and Agriculture departments) have resulted in some rivers that were identified as 'wild' being reclassified as 'recreational'.

The mixed record of the WSRA's effectiveness has been specifically discussed in the context of in-depth surveys conducted on the 30th (1998) and 50th (2018) anniversaries of its enactment (Krumpe and McLaughlin, 1998; Paveglio et al., 2022). Paveglio et al. (ibid) demonstrate the relative stability of the weaknesses in the WSRS that were identified by water management stakeholders (federal and state agencies, NGOs, Congress, outfitters, locals). The key factor in both surveys is the lack of visibility and understanding of the functioning and effects of the WSRA. According to these studies, educating the public and all those involved in water management remains a major area for improvement, but there is also a lack of financial and human resources. In this respect, Paveglio et al. (ibid) report the concerns of stakeholders about the massive reduction in specialised staff through retirement and because of cutbacks, which is felt to compromise the transmission of knowledge about how to properly manage rivers that are part of the WSRS. These two surveys also highlight the ever-present fear of the political and social changes that the designation of as a 'wild river' would entail. More specifically, local stakeholders still seem to fear a loss of power to the federal level and restrictions on use of river water. In both surveys, respondents had questions regarding the interaction between private and public actors and, more generally, the uneven and chaotic nature of the decision-making process leading to the inclusion of a river in the WSRS.

More specifically, the issue of land ownership quickly arises because the system is quite easily inaugurated in the western US by the integration of rivers draining federal land. As it develops eastward, the network encounters significant difficulties in terms of land ownership. Various solutions are tested and analysed, including acquisition, easement and exchanges (Higgins, 1972; Blumm and Yoklic, 2020). The issue of land ownership concerns the relationship between federal agencies and private landowners, but in the east it also involves the states, with the latter playing a decisive role in the evolution of the system. Twenty-three states have developed their own system for preserving wild rivers (Goodell, 1978; Duparc Winther, 1985; Pyle, 1994). These same states, however, can strategically resort to the federal mechanism in the event of a conflict with powerful proponents of hydroelectric dam construction projects; this was the case, for example, in the conflict over North Carolina's New River (Goodell, 1978). Other states have pursued a strategy of local bargaining that poorly conceals clientelist abuses. Fairfax et al. (1984), for example, demonstrated how, in California in the early 1980s, Governor E. Brown had

provoked an environmentalist backlash by signing off simultaneously on the finalisation of the California Water Project and the request for the inclusion in the WSRS of 4000 miles (6400 kms) of rivers in the northwest part of the state. Contested by industrialists, the integration of these rivers into the federal system was validated a few hours before the end of Carter's term of office, making the outcome of this bargaining more positive than it might have been (Palmer, 2017). The political stakes of the designation of wild rivers within the federal system thus appear very clearly in this literature review.

Three ongoing processes have contributed to the evolution of the definition of wild rivers and to a reform of the WSRS[13]. First, Perry (2017a and 2021) and Bowker and Bergstrom (2017) are calling for the reinterpretation of the Outstandingly Remarkable Values (ORVs) that determine the identification and integration of rivers into the WSRS through the prism of ecosystem services. The WSRS includes eight categories of values: scenery, recreation, geology, fish, wildlife, prehistory, history, and other values (including hydrology, ecology or botanical resources, but also wilderness, traditional uses, etc). Perry (2017a) have considered reinterpreting the dominance of four categories of values, as determined by their number of mentions for the 208 rivers integrated into the system: 1) recreation; 2) scenery; 3) fish; and 4) wildlife. All four categories are mentioned in more than 70% of the designations. The aim of this semantic reclassification would be to update the designation of values, making them more suited to the challenges of climate change and giving greater weight to ecological dimensions. It would also provide a more politically convincing argumentative matrix (Perry, 2017a). This same study also highlights the lack of a standardised Region of Comparison (ROC) methodology, which should make it possible to identify at the local and regional level the 'unique' ORVs of a river that is being considered for inclusion in the WSRS. Second, other authors such as Blumm and Yoklic (2020: 58) and Gimblett et al. (2017) propose expanding the scope of the framework by extending eligibility to rivers whose wild character could be restored through dam removal. Third and finally, the evolution of the scheme seems to be guided by a renewal of the role of local inhabitants, users and stakeholders. Beyond the classic analysis of the perceptions of users of recreational activities as 'consumers' (Cribbs et al., 2020), several authors describe the beneficial effects of more inclusive and democratic decision-making processes based on community-based or community sciences approaches (Becker, 1981; Field-Juma and Roberts-Lawler, 2021; Hunt et al., 2021; Paveglio et al., 2022). Despite its limitations and its increasing inadequacy in the face of contemporary issues such as climate change and biodiversity collapse, the WSRA has the advantage of engaging stakeholders in a proactive process. Indeed, the Act mandates not only the conservation of designated wild rivers, but also the enhancement of the qualities (the ORVs) that determine their heritage status (Bonham, 2000; Feldman et al., 2005; Perry, 2021).

The international emergence of 'free-flowing rivers'

The second focus of the in-depth reading is the transformation of the scientific subject of 'wild rivers' into 'free-flowing rivers'. As we have shown in the first two parts of the review (the lexical and thematic approaches), the subject of free-flowing rivers emerged during the 1980s and clearly established itself from the early 2000s onwards (Abell and al., 2007; Tagliaferro et al., 2013; Zhou and Liu, 2020; Suárez et al., 2021; Petersen, 2022). This reflects the clearer structuring of a sub-field that specialises in the ecological characteristics of rivers whose flow is not obstructed by weirs and dams. Exploring the genesis of the WSRS has made it possible to highlight the link between the description of a river as wild and the preservation of its free-flowing conditions. In the articles in our corpus, those that deal more specifically with free-flowing rivers (as determined by the presence of the expression in the title) no longer systematically associate this characteristic with the wild quality of a watercourse, or at least rarely do so explicitly. A river's 'wild' character seems generally to be replaced by other markers of ecological quality that are more technical and easier to objectify.

[13] The scientific and operational issues associated with this dynamic have been well documented and summarised in the special issue on wild rivers in the *International Journal of Wilderness* (Chesterton and Watson, 2017).

From the end of the 1970s, the conceptual contributions highlighting the interactions between hydromorphological processes and the health of river ecosystems were decisive in the deployment of ecological restoration practices; these included the River Continuum Concept and the Serial Discontinuity Concept (Vannote et al., 1980; Ward and Stanford, 1983). These concepts and their related notions, such as natural flow regime, connectivity and fragmentation, still play a key role in the recent studies on FFRs, since they determine the methods of spatial identification and qualitative evaluation.

In our corpus, 70% (15/21) of the articles mentioning the term 'free-flowing' in their title were published between 2019 and 2024. In line with the review published by the Sierra Club in 1998 (McCloskey, 2001), the authors position their research in the context of the urgent need to preserve freshwater ecosystems. These are among the most biodiverse and most threatened on a global scale. The alert was renewed once again by a motion issued by the International Union for Conservation of Nature (IUCN) in 2020. The characterisation of this emergency on an international scale is accompanied by cartographic inventories of FFRs, which mobilise increasingly massive and complex data (Carver, 2018; Grill et al., 2019; Opperman et al., 2021).

The urgency of protecting FFRs is put into perspective by the weakness of preservation measures at the international level. Protected areas are considered to be ineffective in protecting river corridors, and there are few dedicated national measures. The WSRS model has been widely circulated and continues to be disseminated, including in China (Liu and Yang, 2014; Liu et al., 2020) and in Korea (Ahn and Ahn, 1990) or in Mongolia (Surenkhorloo et al., 2021). However, the impact of this dissemination is very limited. This is demonstrated by Perry (2021), who identified only seven other comparable national schemes: Canada, Mexico, Sweden, Norway, Finland, Spain and New Zealand. The corpus contains 11 articles documenting the implementation of national initiatives for the preservation of wild rivers, the majority of whose authors cite the WSRS. This is not always the only reference model, however; for instance, while the American model has exerted considerable influence over the wild river preservation process in New Zealand (Hughey et al., 2014), Australia's stance is more ambivalent. According to Shah and Rodina (2018), Stein et al. (1998), when developing their own methodology for identifying wild rivers in Australia, distanced themselves from certain decisive elements that were used to characterise wilderness in the United States, including 'remoteness' and 'aesthetic naturalness'. In Australia once again, Kingsford et al. (2005), favoured the Canadian Heritage Rivers System (CHRS) due to its inclusive designation process based on local community participation. The Wilderness Society (2011),[14] on the other hand, acknowledges the impact of the US model on Queensland's wild river protection initiative.

Schäfer (2021) presents a more detailed review of the legal tools available in European countries to protect wild rivers. His diagnosis leads him to call for the establishment of a specific mechanism equivalent to the WSRS. Perry (2021), distinguishes three modalities for the preservation of FFRs at the international level: 1) dedicated national mechanisms (WSRS model); 2) decrees and other forms of targeted legal protection; and 3) Rights of Rivers (derived from Rights of Nature). This last method of preservation has developed in recent years. It allows for better integration of non-Western ontologies and reflects the dynamics of struggles relating to the 'ecology of the poor' in the Global South. The theme of Rights of Rivers (O'Donnell et al., 2024) and the associated struggles, however, only partially cover wild rivers and FFRs. We will return to this specifically in the third and final focus of this in-depth reading of the corpus.

Authors working on the ecological restoration of FFRs unanimously point to the construction of dams as the main factor undermining their sustainability. Finally, and in general, most authors mobilise the rhetoric of ecosystem services to defend the overall value of the FFR (Auerbach et al., 2014; Grill et al., 2019; Perry, 2021; Cortés-Espino et al., 2023; Stoffers et al., 2024). There is thus both a certain continuity with the most recent literature produced on the WSRS and a break with the set of values put forward

[14] Document not included in the corpus (report).

during the development of this American system, which is characterised by the 'heritagisation' of the (recreational) experience of the wilderness.

In terms of definition, an FFR is above all a technical object. In this sense, a set of indicators that is based on instruments, metrics and large databases allows the description and evaluation of these FFRs, conceptualised as natural infrastructures. The quasi-phenomenological concern that underpinned the wild river conservation movement in the United States is no longer relevant here. The notion of free-flowing rivers was central to the WSRS but was relatively poorly defined. Over the last 20 years or so, the sub-field of science that was centred on the study of FFRs has provided much more elaborate systemic definitions based on quantifiable variables, even modelling. In one of the most recent key texts, for example, Stoffers et al. (2024) suggest defining free-flowing rivers as:

> four-dimensional fluvial systems in which ecosystem functions and services are not affected by any human-induced change in fluvial connectivity. This allows for the unrestricted movement and exchange of water, energy, material and biodiversity within the river system and across surrounding landscapes. Following Grill et al. (2019), rivers can be classified as free-flowing if they have high connectivity and habitat quality (Connectivity Status Index > 95%) along their entire length.

Most of these articles, which focus on the scientific characterisation of FFRs, ardently advocate for an operational translation of their proposals. In their view, the mapping and evaluation of FFRs form the basis for the establishment of a preservation and restoration programme. This operational ambition can be observed in a wide variety of geographical contexts, including in the United States (Benke, 1990), Australia (Stein et al., 2001, 2002), and Europe (Stoffers et al., 2024). On this point, and particularly in the European context, the authors emphasise the need to accelerate dam removal programmes. Ongoing research into FFRs is inextricably linked to dam removal (O'Hanley, 2011; Schäfer, 2021; Germaine, 2022; Parasiewicz et al., 2023; Stoffers et al., 2024). This link between science and conservation is so powerful that it contributes to the renewal of public policy frameworks at the European Union level. It should be noted that the corpus includes few critical texts on the mobilisation of the wild – or more specifically of wilderness – as a spur to ecological restoration practices (Wohl, 2013). In other words, the emerging field of critical physical geography (Lave et al., 2018) is poorly represented here. Only the article by Boardman and Foster (2023) explicitly questions the advantages and disadvantages of dismantling dams in order to restore European rivers that have been intensively artificialised in the past, and which are considered by Lespez and Dufour (2021) as hybrid objects. In a completely different geographical context, Brierley et al. (2022) demonstrate how the legacy of planners and the evolution of the biophysical processes of the new Anthropocene regime can thwart ambitions to rewild waterways in New Zealand.

Furthermore, although FFRs appear to be a 'colder' variant of wild rivers – that is, less influenced by the emotional, cultural and identity dimensions of the relationship with otherness – they are nonetheless political objects. In this respect, several authors emphasise the decisive role of scientific collectives and NGOs in safeguarding FFRs that are threatened by extractivist projects in Chile (Blair et al., 2023), in the Balkans (Stoffers et al., 2024; Barraud, in press) or in the Romanian Carpathians (Dejeu and Carpa, 2021). As suggested by one of the reviewers of this article, one could hypothesise that FFRs, by distancing themselves from the idea of wilderness, could propose a conceptual framework that is less permeable to colonial ideology. As it stands, however, this hypothesis cannot be fully validated by the literature review that has been conducted as part of this study.

Otherness relations and colonial controversies

A small number of publications in the corpus directly addresses the specific ontological relationship of Indigenous peoples to wild rivers in the North American context. The issues of maintaining the relationship of Indigenous peoples to wild rivers, or even the effective role that they can play in their management and conservation, are better addressed in a broader examination of the literature on river conservation in North America. One example is Vest's 2005 publication on the central role of the Old Man

River in the cosmological relationship of the Aputosi Pii'kani. The choices made in constructing the corpus tend to under-represent this type of approach, including the most recent contributions (Hite et al., 2024). Although wilderness and its cultural and political underpinnings remain dominant in the definition of wild rivers, North America provides many examples of non-Western ontologies[15].

It is primarily development projects, particularly those involving the construction of large dams, that have led to Indigenous people being dispossessed of their land and deprived of their rights and to an almost irreparable ontological loss. Their marginalisation is clearly revealed in the lack of consideration given to Indigenous perspectives in literature on wild and scenic rivers in the United States. In the corpus studied, Stumpff (2007) discusses the negative social, cultural and economic impacts of hydroelectric development on the Skokomish people since the construction of the first dams on the Skokomish River (Washington) in the 1930s. Bonham (2000) refers indirectly to this Indigenous relationship with wild rivers in a footnote, quoting the phrase that is, according to Palmer (1984), attributed to Chief Seattle of the Squamish (1854): "The rivers are our brothers, they quench our thirst. The rivers carry our canoes and feed our children".

Waupoose Jr. and Redmore (2023) similarly report on the vital importance of the (Wild and Scenic) Wolf River to the Indigenous community of the Menominee Reservation, in northeastern Wisconsin. Armatas et al. (2022) conducted an analysis of attachment to rivers based on a survey that used the Human and Ecological Meanings and Services (HEMS) analytical framework (Williams and Watson, 2007). Using the Flathead Wild and Scenic River system in Montana as an example, they demonstrated that six different human-nature relationships could be identified, one of which is that of Indigenous peoples. This relationship clearly prioritises certain ecological meanings and services such as water quality, aquatic environments, river connectivity, biodiversity and the presence of rare plants. It also prioritises human services associated with their ontology and way of life such as exercising treaty rights and engaging in religious/spiritual practices. The attachment profile of Indigenous peoples also values human meanings, as shown by the importance they give to: 'Opportunities to reflect and learn about social history and past inhabitants', 'Educational and research resources', and 'Native American history and knowledge'. This survey highlights the recent but insufficient initiatives to recognise the rights and values of Indigenous populations. These steps must be accompanied by the repositioning of Indigenous communities within the decision-making process. In this regard, Fredrickson and Mott Lacroix (2017) highlight the fruitful involvement of the Apache people in the original project to restore the wilderness character of Fossil Creek, in Arizona. The preservation and restoration of wild rivers is therefore also based on the mobilisation of Indigenous peoples and the recognition of their rights, their culture and, more broadly, their mode of dwelling. It should be noted that, out of the corpus, the proposed amendment to the Wild and Scenic Rivers Act (2021) coordinated by the NGO American Rivers, The Grand Canyon Trust and the Getches-Wilkinson Center (a law research centre) echoes the issues raised by the last two contributions cited above. This project was developed in response to criticism and expectations expressed in 2020 by advocates for Indigenous peoples:

> In spite of its success protecting rivers, the Act largely omits Tribes, failing to give Native Nations the authority to designate, manage, and co-manage Wild and Scenic rivers within their own boundaries and on ancestral lands. Correction of this omission is long overdue, both in terms of equity and the long-term benefit to rivers.[16]

Brierley et al. (2022) analyse the same issues in a different geographical context in a key article entitled, *Re-imagining Wild Rivers in Aotearoa New Zealand*. In this paper, published in the journal *Land*, the authors highlight how the settlers imposed their conception of rivers as, "inanimate objects serving

[15] That is, ontologies that differ from Western naturalism; animism and totemism are particularly well represented in North America. In this review, ontology and cosmological vision/relationship are used interchangeably.

[16] https://www.tribalwildandscenic.org/

human interests" at the expense of the Māori cosmology, which considered rivers as "living entities" and bearing the meaning of "lifeblood of the land". In this vision, the well-being of the Māori and the rivers are linked by a mode of dwelling that is based on cohabitation. Brierley and his co-authors not only note the negative effects of the weakening of the Māori's cosmological vision by colonial domination; they also demonstrate how Māori ontology has been politically reconsidered since the entry into force of the National Policy Statement for Freshwater Management. This statement includes Te Mana o te Wai (the authority of water), which "explicitly recognises that protecting the health of freshwater protects the health and wellbeing of the wider environment". This recognition is the result of a long process that began with the establishment of the Waitangi Tribunal in 1975 (Knight, 2018). This unfinished process certainly gives the Māori a new position in the governance of water resources, but without, however, guaranteeing them solid status as 'rights holders'. In this sense, in 2017, a new step was taken with the attribution of legal personality to the Whanganui River by the government of Aotearoa; this followed almost a decade of very intense negotiations with the Māori (O'Donnell, 2020). Brierley et al. (2022) further highlight the compatibility of Māori ontology with the general principle of freedom of space for the river corridor. These same authors invite us, with great nuance and subtlety, to take the narrow path that could lead to the invention of a measured form of river rewilding:

> Although re-wilding may not be realistic, accommodating some wild behaviour is at least part of the imaginary in scoping river futures. Enlarging permitted river corridors to allow rivers to adjust their form to a likely increasing magnitude of floods in the coming decades envisages interventions that work with rivers as living, dynamic entities. In turn, this strategy re-connects socio-cultural and ancestral connections to rivers (Brierley et al., 2022: 17).

These new perspectives are expressed in a country that had also adapted the US preservation model in 1981 via the adoption of an amendment to the pre-existing Water and Soil Conservation Act (Hughey, 2013; Hughey et al., 2014; Knight, 2018). Hughey and his co-authors (2014) have described the context of the creation and evolution of this mechanism known as the *Wild and Scenic Rivers Bill* (also known by its operational translation, the Water Conservation Orders, or WCO), which currently concerns 16 rivers. These authors emphasise the initial link between the Wild and Scenic Rivers Bill (WSRB) and the wilderness culture promoted by the heirs of the white settlers. The original text was adopted following a campaign led by Fish and Game New Zealand, an organisation that took over from the former Acclimatisation Societies,[17] which managed fishing rights and were funded by user licences (Knight, 2018). This campaign was an extension of the Manapouri campaign, an environmentalist mobilisation that began in the 1960s and was focused on the fight against the proliferation of dams. The WSRB, like its American model, emphasises the experiential dimension of wilderness. This time, it is the practice of recreational fishing that plays a decisive role. In 1991, the scheme was reformed quite significantly to emphasise the amenities and intrinsic value of wild rivers. In this respect, the WCOs' "Characteristics considered to be of outstanding significance in accordance with Tikanga Māori" are included in the eligibility procedure. Hughey et al. (2014), however, indicate that only one WCO application was then requested by the Māori; furthermore, only two WCOs explicitly mention the values associated with the Māori Tikanga. It should be emphasised that, beyond the debate on wild river preservation measures, the broader issue of decolonising representations and freshwater management frameworks in Aotearoa is very well documented in the work of Ruru (2011 and 2012) and in the recent synthesis edited by Parsons et al. (2022).

Finally, the literature corpus covers, in a particularly effective way, a controversy that has had international resonance: the Queensland affair, otherwise known in Australia as the 'Cape York controversy'. Eight papers in the corpus, published between 2011 and 2018, analyse this controversy. Gusmerini (2006), Neale (2011, 2012a, 2012b), Smith (2012), Slater (2013) and Shah and Rodina (2018)

[17] These were colonial organisations dedicated to the introduction and development of exotic species from the 1860s onwards.

provide a detailed analysis of this controversy relating to the adoption, in 2005, of the Queensland Wild Rivers Act (QWRA) championed by the Queensland Labor government. This piece of legislation takes on particular significance in the context of the strong mining (bauxite) pressure on the Cape York region in particular. The text presented in 2004 by the then Premier of Queensland, Peter Beattie, is itself part of a federal process of identifying "near-pristine rivers" in Australia; as part of a "wild river programme" (1998), this led to the development of an inventory method based on the assessment of the level of land development of sub-catchment areas and river beds (Stein et al., 2002). The Wild River Act is accompanied by the designation of 19 waterways to be preserved at the Queensland regional level. This proposal has sparked heated controversy that highlights the disconnect between the different scales of political problems, particularly those relating to the management of natural resources.

Noel Pearson, the regional representative of the Indigenous community, is leading the protest against the Wild River Bill. Clearly, the QWRA adopted most of the codes and vocabulary of a colonial preservationist approach. These biases, although well identified in advance (see previous paragraph), led to major political controversy. Pearson, who led the movement to challenge the law, is a native title lawyer whose militant and intellectual contribution to the defence of the rights of Indigenous peoples in Australia is widely recognised. According to Pearson, the QWRA was an extension of the colonial framework that called into question the rights and knowledge of Indigenous communities:

> The Wild Rivers Act strips indigenous people of the right to determine and develop priorities and strategies for the development of their lands. Land and water and the right to 'speak for country' and to make decisions about country is at the core of Aboriginal tradition. Wild Rivers declarations substantially remove the rights of traditional owners to speak for their country and place this responsibility with government bureaucrats and lobby groups (cited in Slater, 2013: 766, and in Shah and Rodina, 2018: 942).

Locally, and particularly in the Cape York region, Indigenous representatives have mobilised to defend the text of the law and challenge Pearson's position (Slater, 2013). Indeed, in the context of extractive threats (bauxite, hydroelectricity), some Indigenous communities, contrary to Pearson, interpreted the QWRA as a source of justice (Shah and Rodina, 2018). They mobilised the law to defend themselves against projects without necessarily adhering to its cultural underpinnings or, in particular, its reference to the wild.

Thus, as Slater (2013) clearly demonstrates, in this context wild rivers become a genuine political agent. Although Pearson's fight was legitimate, the opportunistic support of Tony Abbott, then leader of the Conservative/Liberal opposition and campaigning at the regional level, clouded the scope of the controversy. This position of wild rivers as a political agent, whose defence makes and breaks political alliances across conventional divides, highlights the pernicious effects of the political legacy of colonial rule. The key dimension of Slater's contribution also concerns the theoretical and methodological basis on which she approaches wild rivers (actor network theory, more than human agency):

> It is not an objective definition of the river, be it wild or not, that is needed, "a detached definition everybody should accept, but the active participation of all those whose practice is engaged in multiple modes" with the river (Stengers, 2005, page 1002). I want to assemble a complex political ecology, or as Hinchliffe et al. (2005) prefer, ecologise politics: trace the entanglements, interests, encounters, affects, and political enactments that Wild Rivers produce (Slater, 2013: 769).

BRIEF COMMENTARY ON THE BIASES AND BLIND SPOTS OF THE CORPUS

The methodological choices made when defining the corpus inevitably mean that certain aspects are left in the background. The gaps identified were compensated for by the use of complementary resources such as the works of Palmer, which represent an important contribution to the subject of river conservation in the United States. The keywords used to compile the corpus could lead to the exclusion of certain articles that are essential to understanding the context in which the WSRS emerged (Tippy,

1968; Nash, 1972. These non-corpus resources were therefore very useful in the third part of the paper, which is devoted to an in-depth analysis of the key texts and ideas that emerge from the corpus. The method used to build up the corpus, however, obscures essential elements; these are discussed below.

The 'invisibilisation' of the Canadian Heritage Rivers System (1984)

The presence and analysis of the Canadian Heritage Rivers System (CHRS) is severely underrepresented in this literature review. Canada has adopted a system for recognising and protecting rivers from a broader heritage perspective (Porter, 1986; Noel, 1995). Created in 1984, the network now includes about 40 rivers (10,000 km); only the province of Quebec did not want to contribute to its expansion, and officially withdrew from it in 2006. According to the official website of the CHRS, its main objective is to ensure national recognition of "rivers with an exceptional natural, cultural and recreational heritage". It is a process of composing a national narrative that would be written as the river flows, combining in a balanced way the ecological and cultural components of the relationship with the river and the spaces through which it flows, that is, taking into account the Indigenous mode of dwelling. The relationship with places as a condition of existence seems to be integrated into the ambition of the project (Swinnerton and Buggey, 2004). While the designation process is presented as inclusive, however, the implementation of the CHRS has led to disappointment for some local communities (Welchman, 2015).

In eastern Canada in particular, some applications have been rejected because of the weight of social representations underlying Parks Canada's (PC) assessment. This appears to have been the case for the Annapolis River (Nova Scotia, Bay of Fundy) in the mid-1980s. PC's assessment was then heavily influenced by the reference model of western Canadian rivers; they appeared pristine compared to eastern rivers, which bore the marks of continual developments since the arrival of the first settlers. Parks Canada also implicitly linked this criterion of natural integrity to the valorisation of the cultural figure of the 'voyageurs' who developed the fur trade with the Indigenous population in the 18th and 19th centuries. Symbolically, the pair consisting of the mythical traveller and his canoe refers to the history of internal colonial migration and reveals an early form of wilderness experience (Welchman, 2015). The CHRS, influenced by the national policy of reconciliation (especially since 2007/2008), has evolved by promoting a rebalancing of expertise in favour of the Indigenous population.

There are certainly some possible points of comparison between the CHRS and the Wild and Scenic Rivers System established in the United States, but clearly the issue of preserving wild rivers is less prominent and less decisive in the Canadian system. The explicit objective of the system is to construct a narrative of heritage and identity, while the current CHRS, at the same time, promotes a model of environmental and territorial stewardship.

The 'ghost' sources not included in the corpus

Wild rivers are hybrid objects that carry a strong symbolic charge. Their semantic and political dynamics are woven from multiple forms of knowledge and they are situated at the crossroads of numerous socio-spatial issues. Reading this review may thus cause frustration among river conservation specialists. It seems clear that the number of papers in scientific literature whose central focus is wild rivers constitutes only a small subset of the numerous sources that document and examine them. The study of wild rivers could thus benefit from additional insights through the creation of an expanded body of knowledge that is based on a wide variety of other sources such as media (press, TV news), films, documentaries, photography and social networks. There is also a vast amount of grey literature specific to each conservation system, and to this can be added the enormous amount of material constituted by the grey literature specific to each preservation mechanism. The repertoire of environmental struggles – and therefore the activist experience itself – also constitutes an obvious source (Vos, 2024). Other sources,

even more original, can be identified. One example is the *5000 Miles of Wild*[18] campaign coordinated by a dozen nature conservationists as part of the 50th anniversary celebrations of the Wild and Scenic Rivers Act. This campaign has collected a large number of personal testimonies documenting the relationship of Americans to wild rivers. The campaign aimed to collect 5000 written testimonies accompanied by photographs, which would constitute a massive and very rich body of research material. Finally, case studies from the grey literature that include field surveys can also provide important elements for understanding the renewal of struggles in defence of wild rivers. The review presented here would be further complemented by a targeted bibliographic search based on the names of rivers that have been the subject of these environmental mobilisations (see, for example, the case of the Vjosa River, Albania, as discussed by Schiemer et al., 2018; Bon et al., 2022; Crivellaro et al., 2024; Stoffers et al., 2024).

CONCLUSION: – WILD RIVERS AS OBJECTS – 'COLD TECHNICAL' OR 'HOT LIVING'?

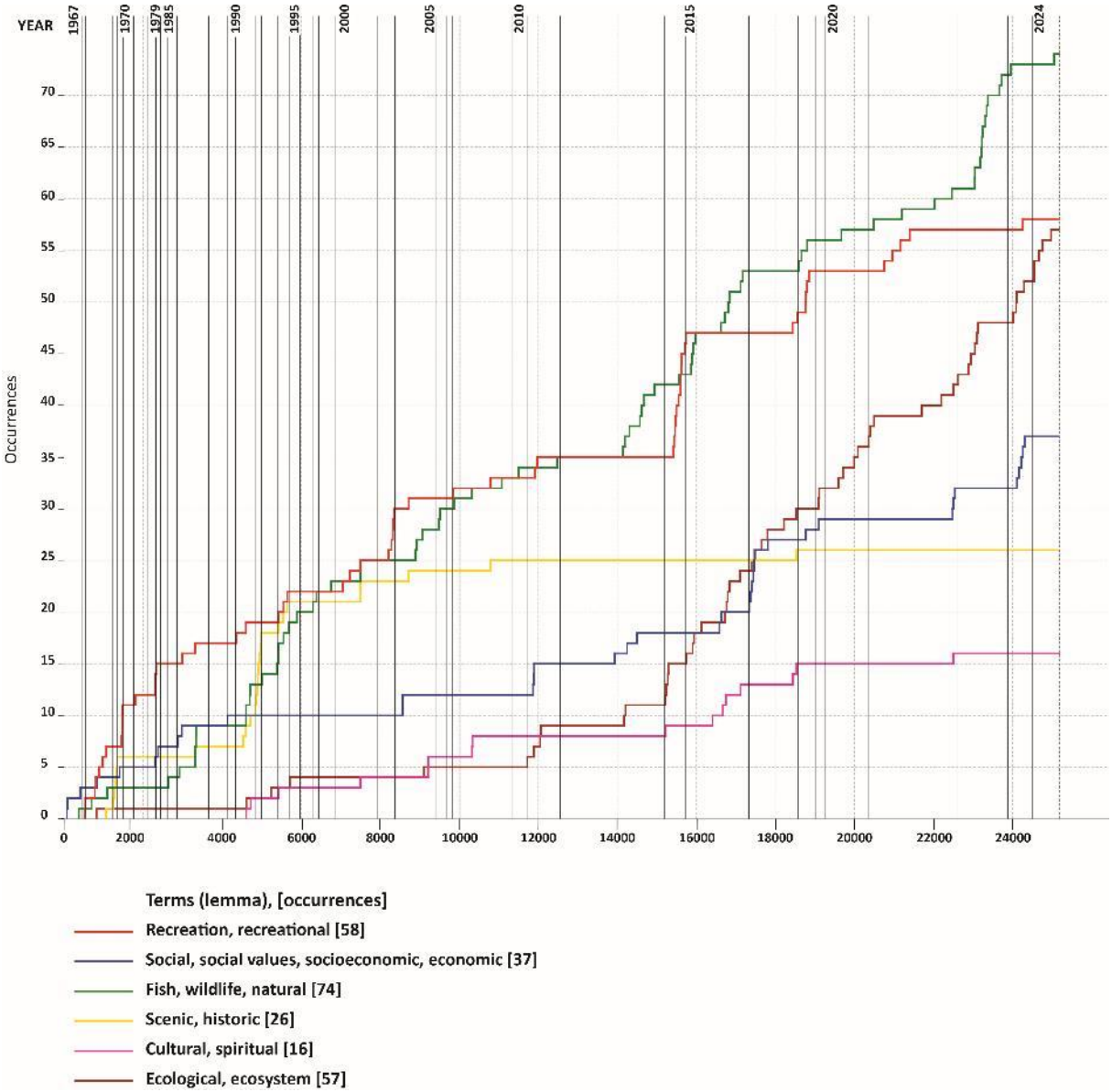
In 1968, the WSRS established a selective system of protection for the wild rivers of the United States based on the link between free-flowing conditions and the identification of Outstandingly Remarkable Values (ORVs). While the first actions to protect wild rivers were taken over 50 years ago, scientists and environmentalists are still searching for the most effective ways to convince people of their value. The discourse around defending or promoting wild rivers and the strategies of conservation have evolved over time (Figure 7). Prioritising one category of value over another is a strategic choice. Ecological processes have become particularly decisive, both scientifically and strategically. The corpus testifies to a profound movement towards the recognition of non-Western ontologies. This recognition of the plurality of cultural values is increasingly linked to a better – but fragile – political inclusion of Indigenous populations. These two interrelated processes are expressed either through procedural improvements or conflict.

We have also seen how the rhetoric of ecosystem services has been spectacularly deployed to re-demonstrate the value of free-flowing rivers. Wild rivers appear in this corpus as both a technical and a complex political object. They are a kind of hybrid object with a 'cold' pole that gives rise to the production of instrumental methods of identification including cartography, characterisation, modelling and assessment. These rivers are literally objectified, but they are not inert technical objects. The rise of functional ecology seems to be contributing in some way to the recognition of the agency of wild rivers, driven by multiple processes that support biodiversity and water quality. These FFRs are alive, but in this 'cold' conceptual setting they do not necessarily evoke emotion.

In the late 1960s, however, in the American context, the emotional register – through the relationship between experience and identity – came to be subtly claimed as the most effective political lever, taking on a particular cultural meaning closely associated with wilderness. In colonial contexts, the rhetorical use of the link between the idea of wilderness and rivers can be particularly toxic, as demonstrated by the controversy over the Wild Rivers Bill on the Cape York Peninsula (Queensland, Australia, 2004-2013). Certain Indigenous communities have expressed opposition to this course of action, with the aim of safeguarding their rights, their unique worldview, and their preferred trajectory of development. Other communities, in contrast, have demonstrated a willingness to agree to a compromise (of a Faustian nature?) by embracing these initiatives. The motivation behind this compromise is the desire to circumvent extractive projects while seeking to augment their political influence. In New Zealand, but also in Canada (a territory completely invisible in the corpus), the fragile and unfinished process of

[18] https://www.5000miles.org

Figure 7. Diagram showing changes in the use of terms associated with the values underpinning the identification and preservation of wild rivers (using TXM progression processing).



Source: Author's own elaboration – TXM V 0.8.

political and cultural recognition of Indigenous peoples seems to open up new perspectives for inventive coexistence between humans and non-humans. In these contexts, rivers are no longer perceived as simply animated technical objects, but rather are seen as living beings. They are then sometimes brought to media and political attention, as when they become the focus of campaigns to defend the 'rights of (wild) rivers'. This reactivates their emotional position at the 'hot pole' of the definition of wild rivers.

Over the last 20 years or so, a semantic shift from wild rivers to FFRs has emerged in the scientific literature. Does this shift signal some kind of rupture between these two hot and cold poles, or does it reveal a repositioning of scientists in the field of conservation? Does it suggest a movement away (intentional or not) from the ideologically trapped register of wilderness? Or does it also testify to a differentiated distribution among actors of the symbolic and semantic charge of wild rivers? In the latter

scenario, scientists would carry out a work of objectification and rationalisation in order to better redirect public conservation policies, while environmental organisations would rely more on the emotional register of protecting the 'last wild rivers' in order to strengthen mobilisation.

On the basis of this review and the parallel research (Barraud, 2021; Barraud, in press), it is possible to present a research agenda that addresses the issues raised above. This will require exploring the above questions in more depth and addressing the blind spots revealed by this literature review. The aim is to analyse how the struggle for the defence and restoration of wild rivers acquires narrative form through grassroots environmental mobilisations and the campaigns of conservation NGOs. It is also worth examining the political agency of wild rivers in the context of the construction of eco-frontiers (see Guyot, 2011, 2017), particularly in peripheral European regions that are confronted with the effects of processes that are antagonistic to nature conservation initiatives (industrial forestry plantations or massive hydroelectric developments). At a theoretical level, this literature review shows that wild rivers and their conservation can usefully be approached from the perspective of "pragmatist geography"[19] (Le Lay, 2019, 2021; Comby and Le Lay, 2021). This approach shows how modes of dwelling and relationships with beings (in this case wild rivers) subtly combine knowledge, uses and emotion. It is this triad that shapes the trajectory of the hybrid 'wild river' object.

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[19] The 'pragmatist geography' proposed by Le Lay (2019, 2021) is based on the theoretical contributions of pragmatist philosophy and phenomenology. The aim is to scientifically decode and politically address problematic situations on the basis of a conceptual model (called "emotionscapes") based on the articulation of three key concepts: "detachment - domination - dependence".

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