# Still reading Gaelic poetry to deaf seagulls? A renewed call for action in climate-adapted forestry

by Helin Dura, Joao Paulo Czarnecki de Liz[1], Lady Cardona[1], Florence Leduc[1], Lauren T. Cooper[2], Vincent Banos[3], Jean Girard[4], and Alexis Achim[1]

**ABSTRACT**

From Canada to Europe, forests face universal climate-driven threats, yet a chasm separates scientific solutions from on-the-ground implementation. Thirty years after G.L. Baskerville described this disconnect as scientists writing "Gaelic poetry for deaf seagulls," the metaphor remains alarmingly accurate. This inaction stems from fragmented perspectives among researchers, industry, and practitioners operating with parallel, sometimes conflicting goals. While robust silvicultural tools like partial harvesting and diversification of forest composition to enhance forest resilience exist, they remain underutilized, threatening the viability of our forests and forest-dependent communities. In this article, we argue that the scientific community must move beyond diagnosing barriers and actively co-create operational and practical solutions. We propose a concrete, three-pronged strategy to bridge the science-practice gap: 1) deeply integrate researchers within partner organizations for hands-on collaboration; 2) strengthen the unique influence of forest certification by demanding that standards link procedural audits to measurable climate adaptation outcomes; and 3) create government financial incentives to make adaptive silviculture economically viable. The urgency is paramount. The responsibility of researchers now extends beyond publication to knowledge transfer.

**Keywords:** solutions, implementation, disconnect

**RÉSUMÉ**

Du Canada à l'Europe, les forêts sont confrontées à des menaces climatiques universelles, mais un fossé sépare les solutions scientifiques de leur mise en œuvre sur le terrain. Trente ans après que G.L. Baskerville a décrit ce décalage comme des scientifiques écrivant « de la poésie gaélique pour des goélands sourds », la métaphore reste d›une précision alarmante. Cette inaction découle de la fragmentation des points de vue entre les chercheurs, l›industrie et les praticiens qui opèrent avec des objectifs parallèles, parfois contradictoires. Bien qu›il existe des outils sylvicoles reconnus, tels que la récolte partielle et la diversification de la composition forestière pour améliorer la résilience des forêts, ceux-ci restent sous-utilisés, menaçant la viabilité de nos forêts et des communautés qui en dépendent. Dans cet article, nous soutenons que la communauté scientifique doit aller au-delà du diagnostic des obstacles et co-générer activement des solutions opérationnelles et pratiques. Nous proposons une stratégie concrète en trois volets pour combler le fossé entre la science et la pratique : 1) intégrer intimement les chercheurs au sein des organisations partenaires pour une collaboration pratique; 2) renforcer l'influence déterminante de la certification forestière en exigeant que les normes relient les audits procéduraux à des résultats mesurables en matière d'adaptation au changement climatique; et 3) créer des incitations financières gouvernementales pour rendre la sylviculture adaptative économiquement viable. Il est primordial de passer à l'action. La responsabilité des chercheurs s'étend désormais au-delà de la publication pour inclure le transfert de connaissances.

**Mots clés** : solutions, mise en œuvre, déconnexion



[1] Département des sciences du bois et de la forêt, Université Laval, 2425 rue de la Terrasse, Québec, QC, G1V 0A6, Canada

[2] Sustainable Forestry Initiative, 1306 Wellington Street West, Suite 400, Ottawa, K1Y 3B2, Canada

[3] Sociology, INRAE, UR ETTIS, F-33612 Cestas cedex, France

[4] Bureau du Forestier en chef, Ministère des Ressources naturelles et des Forêts, Atrium A-413.3, 5700, 4e Avenue Ouest, A 303. Québec (Québec) G1H 6R1, Canada

## Introduction

This past summer, we had the chance to participate in a summer school in Europe in which our goal was to share and compare Canadian and European perspectives on forest management practices adapted to global change, expecting to find stark contrasts. Instead, our most striking discovery was one of resounding similarity. Staring at European landscapes affected by drought, windthrow, insect outbreaks, and increasing fire risk, we could have easily been in any Canadian forest. The challenges are universal: a changing climate is pushing our forests and our management paradigms to a breaking point.

Even more striking was the shared sense of frustration. Both in Europe and back home in Canada, a vast and sophisticated body of scientific literature calls for an urgent shift in silvicultural practices to enhance forest resistance and resilience (Yousefpour *et al.* 2012; Mina *et al.* 2021). The solutions are not revolutionary; they consist of a handful of well-known tools like partial harvesting and other silvicultural practices ensuring the diversification of species and structures across stand and landscape scales. These robust, versatile approaches are well-supported in the literature as efficient tactics to enhance forest resilience to multiple stressors (Jactel *et al.* 2009; Chagnon *et al.* 2025).

Yet, despite decades of research, these solutions remain largely unimplemented, and forest management often follows a business-as-usual approach. It has been thirty years since G.L. Baskerville (1994) captured this disconnect in his essay, "Gaelic poetry for deaf seagulls." In it, he contrasted the elegance of scientific research with the intricate reality of practitioners who must make timely decisions in a complex world. Three decades later, the metaphor remains uncomfortably accurate. As scientists, we must acknowledge our part: we are still writing poetry, and our forests, along with the communities that depend on them, can no longer afford this disconnect.

We believe the issue arises not from a lack of knowledge or from the "deafness" of practitioners, but from the very structure of the forestry sector. Beyond their intrinsic value as reservoirs of biodiversity, forests are also home to a complex web of human relationships (Himes *et al.* 2024). There is not a unique reality; instead, multiple and diverse perspectives are constructed and experienced by those who shape them. For First Nations, the forest is a living territory—a source of culture, sustenance, spiritual identity and a foundation for ongoing and future land claim settlements. The forest is also an object of study for researchers, a planning challenge for forest managers, and an economic resource for members of the industry. These often-competing rationales create a fragmented governance landscape where stakeholders become accustomed to 'business-as-usual', based on default practices, creating an illusion of security and control. The result is a persistent disconnect between research intentions and on-ground realities, where innovative solutions remain trapped within sectoral boundaries rather than emerging through collaborative engagement across the full spectrum of forest stakeholders.

The scientific community has, of course, examined this gap, producing comprehensive reviews outlining the "barriers" to integrating climate adaptation (Puettmann *et al.* 2015; Williamson and Nelson 2017; Hagerman and Pelai 2018; Hertog *et al.* 2022). We have also engaged in sophisticated academic debates, such as the one between (Williamson and Nelson 2017) and (Wellstead *et al.* 2018), on whether "barriers" or "causal mechanisms" is the right framework to understand the political dynamics of inaction. While important, this debate can feel like a symptom of the very issue Baskerville identified: we are debating the grammar of poetry while the seagulls struggle to navigate the storm.

The core challenge is to overcome this fragmentation of perspectives. To achieve this, we must develop and implement an integrated adaptation strategy capable of ensuring the ecological resilience of our forests, broad societal support for management, and the economic viability of the industry.

Researchers can play a key role in helping the sector meet this challenge, but it requires that we adopt a new mandate. Our responsibility must now extend beyond publication and seek the active translation of scientific findings into robust, applicable forest management solutions. This is not a call for "dumbing down" science. It is a call for clear, scientifically sound, and flexible operational principles that give practitioners the stability and predictability they need. Following Baskerville's insight, this means prioritizing functional realism over academic precision where necessary, while transparently acknowledging the inherent trade-offs in every management decision.

Given the urgency of climate impacts on our forests, we propose the following solutions to bridge this persistent gap between knowledge and practice.

### Integrated research partnerships: from consultation to co-creation

The Canadian research funding landscape, through programs like Mitacs and NSERC Alliance, has long provided fertile ground for industry-academic partnerships. These programs are designed to be catalysts for innovation, linking scientific inquiry with industrial needs. However, we must be honest in our assessment: their existence alone has not closed the chasm that Baskerville described. Funding alone cannot bridge the gap—successful knowledge transfer and practice change require a deep, sustained engagement where all parties actively participate in co-creating solutions that reflect on-the-ground realities and constraints. The problem often lies not in the 'what' (i.e., the project itself) but in the 'how' (i.e., the very nature of the collaboration). We must therefore deepen the partnership from a transactional relationship to a truly integrated one.

For researchers to move beyond periodic consultation and reporting of results to practitioners, we propose a simple but transformative step: formally integrating a representative from a partner organization onto the supervisory committee of every applied graduate research project. This is not a symbolic role, but a substantive one, giving practitioners a voice and shared responsibility in guiding the research from its inception to its conclusion. Just as Arnould *et al.* (2021) argue that private owners should be involved in policy instruments development from the outset, we believe that representatives from organizations that researchers seek to impact should be mobilized as co-creators in the research design process from the start. This collaborative governance model transforms the traditional researcher-practitioner dynamic from one of knowledge transfer to one of knowledge co-production, ensuring that research questions, methodologies, and outcomes are grounded in real-world needs and contexts while maintaining scientific rigor and advancing both theoretical understanding and practical application.

This structural change would ensure that research is operationally relevant from day one. With a practitioner helping to co-define the research question, the project is immediately grounded in the real-world constraints of budgets, policy, and social license to operate. This process prevents the creation of elegant solutions for problems that, in practice, do not exist. Crucially, it also establishes a continuous feedback loop. A committee member is not a passive recipient of a final report but an active participant in the research journey. They provide real-time feedback, help navigate practical hurdles, and ensure the final tool is fit-for-purpose. Such a collaborative approach is essential to achieving practically useful scientific outputs that meet real-world needs.

Most importantly, this deep integration makes knowledge transfer a genuine two-way street. The practitioner becomes an internal champion for the research, dramatically increasing the likelihood of its adoption because they helped compose it. In return, the academic team gains access to invaluable tacit knowledge while focusing their efforts to address pressing challenges. This model does not just produce a thesis; it builds lasting relationships and trains a new generation of researchers fluent in the languages of both science and practice—the very translators our sector so desperately needs.

### Strengthening forest certification as a tool for climate adaptation

Forest certification schemes are among the most powerful, market-driven frameworks for influencing on-the-ground practices (Rametsteiner and Simula 2003). However, the early concepts of forest sustainability did not include climate change considerations, and certification programs are evolving to explicitly address these topics like adaptation and mitigation (Cooper and MacFarlane 2023). As certification is designed to meet or exceed regulatory requirements, they represent a critical and established pathway that can advance climate-adapted forestry. However, to fully realize this potential, these systems are ready to take a further step in their evolution. Wolff and Schweinle (2022) propose a clear roadmap for this enhancement, identifying two key areas where strategic improvements can significantly boost real-world impact.

First, we must strengthen the standards themselves by integrating precise, measurable, and scientifically backed indicators for climate adaptation. Currently, many certification standards require managers to "consider" or "maintain" values like biodiversity, which is often interpreted as simply avoiding negative impacts. To be truly effective, standards must evolve to demand proactive, positive action. This could translate decades of research on forest resilience into clear, auditable benchmarks, providing practitioners with both the guidance and the market incentive to adopt practices like partial harvesting and species diversification. It would transform certification from a system that primarily audits compliance into a proactive tool that guides forest managers toward building future-resilient forests.

Second, we must enhance the credibility of certification by evolving its verification methods from auditing procedures to verifying tangible outcomes. A significant limitation of current audits is their focus on process: "Was a management plan written? Were the procedures followed?" To bridge the gap between intent and execution, verification must also ask, "Did the plan work? Is there evidence the forest is more resilient?" This requires collaboration with researchers and practitioners to determine practical, feasible, and meaningful data that can be utilized in the reporting process.

Ultimately, this dual evolution—stronger, science-informed standards coupled with outcome-based verification—would help to continually improve certification from a compliance mechanism into a more dynamic engine for continuous, adaptive improvement. It would create the essential link that ensures the best available science is not only recommended but is actively and effectively implemented on the ground.

### Realigning economic incentives to foster innovation

Adaptive silvicultural tools like strategic thinning and species diversification remain underutilized because they often fail a simple test: profitability. The central challenge is shifting from empirical silviculture based on past practices to proactive management for long-term resilience (Achim *et al.* 2022). This requires confronting two economic barriers: higher upfront costs for complex management approaches (Puettmann *et al.* 2015) and the systematic undervaluing of future benefits through conventional discounting. Standard financial frameworks based on discount rates make resilience investments appear financially irrational, incentivizing cheaper, higher-risk strategies that pass ecological and economic risks to future generations. Buongiorno and Zhou (2015) demonstrate this empirically, showing that maximizing discounted net present value suppressed old-growth forests and reduced carbon sequestration by more than half.

To overcome these barriers, scientifically backed economic frameworks provide solutions that reflect the societal economic value of forest resilience rather than treating forests as conventional financial assets. This requires shifting from narrow profit-maximization models to approaches that account for broader economic benefits and distribute climate adaptation costs across stakeholders and generations. Declining discount rates, as suggested by Hepburn and Koundouri (2007), can align intergenerational equity with efficiency, a recommendation recently adopted by the government of Québec. While such uptake is encouraging, declining discount rates alone will still favour simpler forest management scenarios, unless economic models also incorporate climate adaptation benefits and risk-reduction value of diversified forest systems.

Future translations of science-to-practice efforts must integrate economic evaluations that better reflect both near- and long-term forest realities. For example, real options analysis offers complementary solutions by recognizing that adaptive silviculture creates valuable flexibility, allowing forest managers to adjust strategies as conditions change (Ginbo *et al*. 2021). Adaptive forest management also provides substantial cost avoidance benefits beyond the forest sector. Resilient forests reduce measurable societal costs including wildfire suppression expenses, infrastructure damage, and emergency response costs, expenditures otherwise borne by taxpayers and governments (González-Olabarria and Pukkala 2011; Calkin *et al*. 2015).

Since the forest industry alone cannot shoulder climate adaptation costs that benefit entire communities, science-practice collaboration must expand existing financial mechanisms. A climate-informed economy that relies on wood products and byproducts can drive the investment needed to adapt our forests, and every forest intervention is an opportunity to support rural economies while implementing resilience strategies. These efforts aim to create a system where the most resilient path is also the most economically viable, socially just, and equitably distributed among stakeholders and across

generations. This requires that sustainable forest management solutions must be not only financially feasible but also perceived as legitimate and equitable by all affected parties to ensure long-term adoption and success.

## Conclusion

The scientific community now faces a choice. If we fail to offer simple, robust, and science-backed policy and management solutions, we create a vacuum. And as nature abhors a vacuum, that space will be filled by other interest groups and lobbies, often with simple answers that serve their own agendas.

Thirty years after Baskerville's paper, we have the opportunity to change the narrative. The forestry students and researchers who saw their future reflected in Europe's present represent a generation that must be both poets and translators. Let us empower them by fostering a new culture of collaboration—one built on shared responsibility and mutual respect. This requires us to move beyond simply diagnosing the problem, whether as "barriers" or "mechanisms," and to commit to the hard work of co-creating solutions.

It is time to stop writing poetry and start helping the seagulls navigate the storm.

## References


**Achim, A., G. Moreau, N.C. Coops, J.N. Axelson, J. Barrette, S. Bédard, K.E. Byrne, J. Caspersen, A.R. Dick and L. D'orangeville. 2022.** The changing culture of silviculture. Forestry 95: 143–152.

**Arnould, M., L. Morel and M. Fournier. 2021.** Developing the persona method to increase the commitment of non-industrial private forest owners in French forest policy priorities. For. Pol. Econ. 126: 102425.

**Baskerville, G.L. 1994.** Gaelic poetry for deaf seagulls—encore. For. Chron. 70: 562–564.

**Buongiorno, J. and M. Zhou. 2015.** Adaptive economic and ecological forest management under risk. For. Ecosyst. 2: 4.

**Calkin, D.E., M.P.Thompson and M.A. Finney. 2015.** Negative consequences of positive feedbacks in US wildfire management. For. Ecosyst. 2: 9.

**Chagnon, C., S. Dumont, A. Morin-Bernard, H. Jactel, A. Achim and G. Moreau. 2025.** Potential of thinning to increase forest resilience and resistance to drought, pest, windstorm and fire: A meta-analysis. Forest Ecol. Manag. 590: 122788.

**Cooper, L. and D. Macfarlane. 2023.** Climate-Smart Forestry: Promise and risks for forests, society, and climate. PLOS Climate 2: e0000212.

**Ginbo, T., L. Di Corato and R. Hoffmann. 2021.** Investing in climate change adaptation and mitigation: A methodological review of real-options studies. Ambio 50: 229–241.

**González-Olabarria, J.-R. and T. Pukkala. 2011.** Integrating fire risk considerations in landscape-level forest planning. For. Ecol. Manag. 261: 278–287.

**Hagerman, S.M. and R. Pelai. 2018.** Responding to climate change in forest management: Two decades of recommendations. Front. Ecol. Environ. 16: 579–587.

**Hepburn, C.J. and P. Koundouri. 2007.** Recent advances in discounting: Implications for forest economics. J. For. Econ. 13: 169–189.

**Hertog, I.M., S. Brogaard and T. Krause. 2022.** Barriers to expanding continuous cover forestry in Sweden for delivering multiple ecosystem services. Ecosy. Serv. 53: 101392.

**Himes, A., B. Muraca, C.B. Anderson, S. Athayde, T. Beery, M. Cantú-Fernández, D. González-Jiménez, R.K. Gould, A. Hejnowicz and J. Kenter. 2024.** Why nature matters: A systematic review of intrinsic, instrumental, and relational values. BioSci. 74: 25–43.

**Jactel, H., B.C. Nicoll, M. Branco, J.R. Gonzalez-Olabarria, W. Grodzki, B. Långström, F. Moreira, S. Netherer, C. Orazio and D. Piou. 2009.** The influences of forest stand management on biotic and abiotic risks of damage. Ann. For. Sci. 66: 701.

**Mina, M., C. Messier, M. Duveneck, M.J. Fortin and N. Aquilué. 2021.** Network analysis can guide resilience-based management in forest landscapes under global change. Ecol. Appl. 31: e2221.

**Puettmann, K.J., S.M. Wilson, S.C. Baker, P.J. Donoso, L. Drössler, G. Amente, B.D. Harvey, T. Knoke, Y. Lu and S. Nocentini. 2015.** Silvicultural alternatives to conventional even-aged forest management-what limits global adoption? For. Ecosyst. 2: 8.

**Rametsteiner, E. and M. Simula. 2003.** Forest certification—an instrument to promote sustainable forest management? J. Environ. Manag. 67: 87–98.

**Wellstead A., Biesbroek R., Cairney P., Davidson D., Dupuis J., Howlett M., Rayner J., Stedman R. (2018).** Comment on "Barriers to enhanced and integrated climate change adaptation and mitigation in Canadian forest management". Canadian Journal of Forest Research, 48(10), 1241–1245.

**Williamson, T.B. and H.W. Nelson. 2017.** Barriers to enhanced and integrated climate change adaptation and mitigation in Canadian forest management. Can. J. For. Res. 47: 1567–1576.

**Wolff, S. J. Schweinle. 2022.** Effectiveness and economic viability of forest certification: A systematic review. Forests 13: 798.

**Yousefpour, R., J.B. Jacobsen, B.J. Thorsen, H. Meilby, M. Hanewinkel and K. Oehler. 2012.** A review of decision-making approaches to handle uncertainty and risk in adaptive forest management under climate change. Ann. For. Sci. 69: 1–15.