

THE KNOWLEDGE WE DO NOT HAVE

Scientific progress is often measured by what is discovered. New species, treatments, materials, technologies, and explanations of natural and social phenomena continuously expand the boundaries of what is known. Never before has so much information been produced, stored, and shared. Yet alongside this vast body of knowledge lies another, far less visible territory: that of what we still do not know.

Recognizing its existence is not a weakness of science. On the contrary, identifying the unknown has always been one of the driving forces behind scientific progress. The problem arises when knowledge gaps are not apparent, or when what is only partially understood begins to be regarded as sufficiently known. A lack of information can then influence the questions being asked, the models being constructed, and, ultimately, the decisions being made.

These gaps are not evenly distributed. Some species, ecosystems, populations, and territories have been studied for decades, while others remain poorly documented. Recent research reveals significant geographical and thematic imbalances in the available knowledge of tropical environments and indicates that vast areas of the ocean remain inadequately sampled. Paradoxically, some of the most biologically diverse regions on the planet are among those for which substantial information gaps persist.

The issue extends beyond the natural sciences. In health, education, economics, agriculture, and the social sciences, the availability and quality of data determine which phenomena can be adequately characterized and which remain partially hidden. An underrepresented population, an interrupted time series, or a poorly documented local reality can limit the ability to explain phenomena and design appropriate responses. What is neither observed nor measured can hardly carry the same weight in the construction of knowledge. And these absences are not necessarily harmless: what is insufficiently understood may receive less attention when conservation priorities are established, public policies are designed, or health, educational, and productive decisions are made. A knowledge gap can thus become an attention gap.

For Latin America and the Caribbean, this issue is particularly important. The region's extraordinary biological, environmental, cultural, productive, and social diversity

contrasts with highly unequal scientific capacities and information systems across countries and territories. Generating knowledge within the region does not mean disregarding the universal and collaborative nature of science. It means having sufficient evidence to understand realities that cannot necessarily be explained through data obtained in other contexts. The challenge is not only to produce more knowledge, but also to recognize which territories, populations, phenomena, and problems in the region remain insufficiently studied and which of these gaps are especially relevant and deserving of priority.

The increasing use of large databases, computational models, and artificial intelligence adds a new dimension to the problem. These tools make it possible to identify relationships and process information on a previously unimaginable scale, but their capabilities depend largely on what has already been observed and recorded. A model can detect patterns among millions of data points; it cannot recover information that was never generated. A greater capacity to process what is known does not necessarily mean reducing what remains unknown.

Therefore, an essential task of contemporary research is also to recognize its own gaps. Asking what remains to be known, where the greatest information gaps lie, and which realities remain insufficiently represented may be as important as producing new results within extensively studied fields. For INTERCIENCIA, contributing to the circulation of questions, knowledge, and perspectives from different disciplines and contexts across our region is also a way of helping to identify and reduce these still insufficiently explored areas.

The frontiers of science are defined not only by the answers already obtained, but also by the questions we have not yet been able to formulate. At a time characterized by an unprecedented availability of information, recognizing the knowledge we do not have may, paradoxically, be one of the most necessary ways to continue moving forward.

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