Publicly available Amazon Waters mapping tool allows for multi-scale management

Scientists that form part of the Amazon Waters Initiative have made available a new database that can be downloaded for the development of spatial analyses of the Amazon basin.

This database incorporates hydrological concepts and elements of the Amazon freshwater system that were not incorporated into spatial products at a larger scale, the Amazon River main stem (Fig 1) and its associated floodplains, are represented in this database as their own unit, allowing a classification that reflects the heavy flooding during the rainy season. At a smaller scale, the lower order streams where many aquatic organisms live are included in this database, allowing for analyses of wetlands and fishery production.

Lower order streams are included in the framework as lines from 1st to 11th order, where 1st order means the uppermost tributary, and 11th order means the main Amazon stem. This allows drainage analysis even at the headwaters of the basin (Fig. 2). Finally, this framework seamlessly integrates information about some rivers themselves, such as their names (up to 6th order) and a first approximation of their water type (up to 6th order).

What makes this database different?

Whether the user is a researcher, practitioner, or policymaker (ciencheproexbellasaguas@gmail.com is available for analysis in any spatial software). The hierarchical classification of the watersheds and the drainage network provides a spatial framework that can be adjusted to different scales depending on what management and monitoring question is being answered. By grounding other data within this framework, we can now identify the places these fish use and migrate to protect and conserve them. This is only one example of how this dataset can be used to help conservation and development planning in the Amazon basin. The database can also inform urban planners by identifying places where flooding could become more extreme as the Amazon region is developed. Policy makers can use the database to quantify the cumulative effects of upstream events and investments on the Amazon main stem. This spatial framework provides a strong foundation for questions relating to the connective tissue of the Amazon and its associated floodplains.

What is the Amazon Waters Initiative?

The Amazon Waters Initiative is a call to action to conceptualize the vast Amazon aquatic ecosystem as a whole, bringing together people to work across a myriad of boundaries: the borders of the river basins, the protected areas, and the institutions that work within it. It’s an effort to understand the integrity of the interlinked and dynamic Amazon freshwater system in order to sustain human well-being, wildlife, and the environments on which they depend.

Learn more about the Initiative’s work at the website: www.amazonwaters.org

Fig.1 - Schematic definition of main stem data framework. Fig.2 - Close up of Marañon headwaters showing orders 4 through 9.