International Union of Forest Research Organizations
Union Internationale des Instituts de Recherches Forestières | Unión Internacional de Organizaciones de Investigación Forestal | Internationaler Verband Forstlicher Forschungsanstalten

IUFRO SPOTLIGHT

__IUFRO Spotlight__ is an initiative of the International Union of Forest Research Organizations. Its aim is to introduce, in a timely fashion, significant findings in forest research from IUFRO officeholders and member organizations to a worldwide network of decision makers, policy makers and researchers. IUFRO will encapsulate, and distribute in plain language, brief, topical and policy-relevant highlights of those findings, along with information on where/how to access the full documents.

Occasionally, __IUFRO Spotlight__ also presents special activities such as sessions at major IUFRO congresses or the work of the IUFRO Task Forces. These focus on emerging key issues that contribute to international processes and activities and are of great interest to policy makers and to groups inside and outside the forest sector. With those criteria in mind, __the Spotlights of the past several months highlighted the undertakings and goals of the IUFRO Task Forces__. The __IUFRO Spotlights__ will be distributed in a periodic series of emails as well as blog postings.

IUFRO Spotlight #86 / January 2021

Analyzing the complicated forest-water relationship

More than 500 years ago Leonardo da Vinci said: “Water is the driving force of all nature.”

There is a corollary that could easily be added to da Vinci’s truism: Water is greatly aided and abetted in that role by forests.

Forests play an integral role in the water cycle by enhancing the world’s supply of clean water. Much of the globe’s freshwater is provided through forested catchments.

Forests protect water quality, flow regimes, aquatic systems, soil and have critical interactions with climate.

Riparian vegetation and landscape in Mongolia, a country where freshwater resources are scarce – Photo by Alexander Buck, IUFRO

Any forest changes, whether through nature or through human action, can significantly affect water resources and water-related ecological functions and services, often in a negative fashion.

A recent global assessment on forests and water demonstrated that forests, water and climate should all be assessed and managed in an integrated way at all spatial and temporal scales.

The assessment also identified critical research gaps among which forests/forest carbon, climate and water interactions and their effects on forest water use, water supply and flow regime were seen as among the top emerging priorities.

One result of that assessment has been a IUFRO Task Force (TF): ***Forests and Water Interactions in a Changing Environment***, organized to focus specifically on those research gaps.

“The relationship between forests and water is complicated,” said Dr. Adam Wei of the Department of Earth, Environmental and Geographic Science at the University of British Columbia, Canada, and coordinator of the TF.

“There are large variations in the forest-water relationship due to the interactions and feedbacks of climate, forests and watershed properties. In addition, the relationship is not only about science, but also about cultures, policy and governance. What all that means is that we need a systematic approach to look at all the interactions effectively.

“Fortunately, in our TF we have a good, mixed pool of expertise from all continents – world-leading scientists in their respective fields – and we include some experts from the social sciences and policy areas.”

The TF will examine interactions and feedbacks of forests and water in a broad context that will consider impacts of – and on – climate, variability and change, as well as emerging climate change mitigation strategies, markets and adaptive forest and water management.

“Climate change,” said Prof. Richard Harper, from Australia’s Murdoch University and a deputy coordinator of the TF, “is a significant issue. Not only does it directly affect water supplies, but it also indirectly influences water by its impact on forests through disturbance such as wildfire, drought and mortality.

“To address climate change impacts and sequester more carbon in forests, large-scale reforestation projects are proposed, and some are being implemented. Similarly, there are ambitious international forest restoration targets. However, while restoration is becoming an important activity globally, in some regions it can cause reductions in water yields and, if not done properly, may also affect water quality.

“As one example, reforestation or afforestation can reduce the total annual water yield from a watershed, because more trees transpire more water. This results in smaller amounts of water in rivers or in groundwater systems.

“On the other hand,” Prof. Harper continued, “forest restoration activities can have beneficial effects on other hydrological variables, for instance, decreasing peak flows so there’s less chance of flooding. There are also well-documented examples of improvements in watershed water quality.

Leaf area is an important measure for the water use of trees- © iStock: Keikona

“What it all means is that we need to take a good look at all the different aspects of hydrological functions and use science to devise better forest management systems.”

Dr. Shirong Liu, President of the Chinese Academy of Forestry, Vice-President of IUFRO, and also deputy coordinator of the TF said: “In 2018, the *TF Forests, Soil and Water Interactions* played a key role in developing a global assessment on forests and water. While that report supports high-level dialogue and discussion, there is a need to develop guidance for on-the-ground forest practices.

“We have also noted a lack of science-based operational guidelines to support management practices in regard to water protection,” he added.

The TF will evaluate the interaction between science and related policy responses concerning the decline of water values in some forest areas, global forest decline and inter-related climate and landscape scale forest disturbance impacts.

Among other objectives, the TF will examine and evaluate the impacts of vegetation restoration projects on water supply in arid and semi-arid ecosystems and take a look at the effects on forest and water interactions by forest management, afforestation and reforestation at local and regional scales.

Dr. Wei said: "Given the pool of expertise in our TF and our plan to work with other IUFRO TFs and Divisions, I see this as a great opportunity to promote synergy and collaboration across different parts of the world and among different disciplines. One good example is that our TF members are working with a team led by FAO to develop a publication on how to manage forest for water, including how to monitor, implement on-the-ground practices and build a business case. The publication: ***A Guide to Forest-Water Management*** will be released later this year.

"We also plan to develop a special journal issue of synthesized papers to assist forest management practices in the context of water protection. This will benefit forest industries, researchers, municipalities and planners," he added.

###

Forest and Water on a Changing Planet: Vulnerability, Adaptation and Governance Opportunities. A Global Assessment Report. *Editors: Irena F. Creed and Meine van Noordwijk (GFEP - Expert Panel on Forests and Water 2018):* https://www.iufro.org/science/gfep/gfep-initiative/panel-on-forests-and-water/

IUFRO Task Force 'Forests and Water Interactions in a Changing Environment':
https://www.iufro.org/science/task-forces/forests-water-interaction-changing-environment/

(Preceded by the Task Force 'Forests, Soil and Water Interactions':
https://www.iufro.org/science/task-forces/former-task-forces/forests-soil-water/*)*

The IUFRO Task Forces are established on a temporary basis during each 5-year IUFRO Board term and focus on emerging key forest-related issues. The nine current TFs will run till 2024 at which time their relevance will be assessed in relation to the forest issues of the day.

IUFRO Spotlight #86, published in January 2021, by IUFRO Headquarters, Vienna, Austria. Available for download at:
http://www.iufro.org/media/iufro-spotlights/
If you wish to unsubscribe from IUFRO Spotlight, please email us at: office(at)iufro.org
Imprint: http://www.iufro.org/legal/#c18944

IUFRO
Interconnecting
Forests, Science and People