1. Record Nr. UNINA9910407724003321

Autore	Cavender-Bares Jeannine
Titolo	Remote sensing of plant biodiversity / / editors, Jeannine Cavender-Bares, John A. Gamon, Philip A. Townsend
Pubbl/distr/stampa	Springer Nature, 2020 Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020
ISBN	3-030-33157-1
Edizione	[1st edition 2020.]
Descrizione fisica	1 online resource (XXII, 581 p. 130 illus., 110 illus. in color.)
Disciplina	577
Soggetti	Biodiversity Remote sensing Plant science Botany Ecosystems Plant ecology Environmental monitoring
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Chapter 1. The use of remote sensing to enhance biodiversity monitoring & detection—a critical challenge for the 21st century. - Chapter 2. Applying Remote Sensing to Biodiversity Science -- Chapter 3. Scaling Functional Traits from Leaves to Canopies -- Chapter 4. The Laegeren Site: An Augmented Forest Laboratory -- Chapter 5. Lessons Learned from Spectranomics: Wet Tropical Forests -- Chapter 6. Remote Sensing for Early, Detailed, and Accurate Detection of Forest Disturbance and Decline for Protection of Biodiversity -- Chapter 7. Linking Leaf Spectra to the Plant Tree of Life -- Chapter 8. Linking Foliar Traits to Belowground Processes -- Chapter 9. Using Remote Sensing for Modeling and Monitoring Species Distributions -- Chapter 10. Remote Sensing of Geodiversity as a Link to Biodiversity -- Chapter 11. Predicting Patterns of Plant Diversity and Endemism in the Tropics Using Remote Sensing Data: A Study Case From the Brazilian Atlantic Forest -- Chapter 12. Remote Detection of Invasive Alien Species --

Chapter 13. A Range of Earth Observation Techniques for Assessing Plant Diversity -- Chapter 14. How the Optical Properties of Leaves Modify the Absorption and Scattering of Energy and Enhance Leaf Functionality -- Chapter 15. Spectral Field Campaigns: Planning and Data Collection -- Chapter 16. Consideration of Scale in Remote Sensing of Biodiversity -- Chapter 17. Integrating Biodiversity, Remote Sensing, and Auxiliary Information for the Study of Ecosystem Functioning and Conservation at Large Spatial Scales -- Chapter 18. Essential Biodiversity Variables: Integrating in Situ Observations and Remote Sensing Through Modeling -- Chapter 19. Prospects and pitfalls for spectroscopic remote sensing of biodiversity at the global scale -- Chapter 20. Epilogue – Towards a Global Biodiversity Monitoring System. .

Sommario/riassunto

This Open Access volume aims to methodologically improve our understanding of biodiversity by linking disciplines that incorporate remote sensing, and uniting data and perspectives in the fields of biology, landscape ecology, and geography. The book provides a framework for how biodiversity can be detected and evaluated—focusing particularly on plants—using proximal and remotely sensed hyperspectral data and other tools such as LiDAR. The volume, whose chapters bring together a large cross-section of the biodiversity community engaged in these methods, attempts to establish a common language across disciplines for understanding and implementing remote sensing of biodiversity across scales. The first part of the book offers a potential basis for remote detection of biodiversity. An overview of the nature of biodiversity is described, along with ways for determining traits of plant biodiversity through spectral analyses across spatial scales and linking spectral data to the tree of life. The second part details what can be detected spectrally and remotely. Specific instrumentation and technologies are described, as well as the technical challenges of detection and data synthesis, collection and processing. The third part discusses spatial resolution and integration across scales and ends with a vision for developing a global biodiversity monitoring system. Topics include spectral and functional variation across habitats and biomes, biodiversity variables for global scale assessment, and the prospects and pitfalls in remote sensing of biodiversity at the global scale.