

Supervisor's Foreword

Nature's resources are being rapidly depleted as the need for space and resources of an ever growing number of humans increases. Plants, as primary producers, are the basis of nearly all natural productivity, but also the crucial biotic component in ecosystem services, such as carbon storage, and water and oxygen cycling. Man's impact on plant life – once limited and local – is now global and affects the entire biosphere. Hence, a growing number of scientists now state that we have entered a new geological epoch, the Anthropocene.

However, biotic resources are not unlimited and the ability to regenerate is often exceeded by the speed and extent of exploitation. It is in mankind's own vital interest to manage natural resources in a way that makes them last for future generations. This perspective of a "sustainability" depends greatly on various biological features and issues that can largely be captured by biological studies on growth, regeneration, productivity and recruitment. The associated social and economical facets are often less easily quantified and less predictable.

Palms are iconic for the tropics: beaches with coconut palms are the stereotype image of tropical paradise for people from the temperate zone. Extensive palm cultivation can have extremely negative side effects. Large-scale agricultural operations, though desirable, are among the ecologically most disruptive human activities. In respect to their effects on biodiversity, there are probably few agricultural developments that are as devastating as large-scale oil palm plantations in the tropics. On the other hand, palms are suitable for large-scale cultivation operations under relatively natural conditions, and they can provide a vast range of products even in natural densities under sustainable harvest regimes.

Grischa Brokamp participated in the project "PALMS: Palm Harvest Impacts in Tropical Forests" funded by the EU Seventh Framework Programme. As a student researcher within the project's Work Package "Small Industries and Trade Based on Palm Products" he conducted his research at the Institute of Biology, Freie Universität Berlin, from 2009 to 2011 and at the Nees Institute for Biodiversity of Plants, Rheinische Friedrich-Wilhelms-Universität, from 2012 to 2013.

In the present study, Grischa Brokamp reviewed and analyzed the current extent of palm use in northwestern South America, providing interesting insights into associated mechanisms, their limitations and perspectives. He successfully implemented the work package's tasks, learned Spanish and got acquainted with research tools commonly used in economics. One of the most challenging tasks was the collection of trade data by means of interviews with stakeholders along the value chains of the different major palm products that are commercialized in the study region. For this, he developed and stepwise modified a now well-established and standardized research protocol for the acquisition of detailed data on production

and marketing networks of palm products, which he published in Spanish.

The study focuses on understanding the commercial relevance of palms and the relation to the current patterns of use and sustainability. There are conflicts between use and conservation. Current exploitation, trade, and utilization are not in line with industrial practices and needs in a world of perpetual human population growth. Administrative and policy failures can quickly thwart any progress made.

Conflicting uses are influenced by specific attributes of the value chains. Understanding the biology of any particular species can provide important insights into their possible sustainable management, as also demonstrated for the case of rathany (*Krameria lappacea*). With this dissertation, Grisca Brokamp presents valuable aspects of the usefulness, commercialization and possible sustainable use of different plant products from neotropical palms, as well as from a valuable Andean medicinal plant, based on a thorough understanding of the biological characteristics of the plants.

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Relevance and Sustainability of Wild Plant Collection in
NW South America

Insights from the Plant Families Arecaceae and
Krameriaceae

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