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Opportunities for Academic Training in the Science and Practice of Restoration within the United States and Canada

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Abstract

With increasing interest in ecosystem restoration, there is a corresponding need for trained professionals who understand not only the science of restoration ecology but also the management practices and social factors that lead to successful project implementation. We surveyed 300 academic institutions in the United States and Canada with research programs in the ecological, conservation, and natural resource sciences to determine whether current curricula in restoration meet the needs of this growing field. Opportunities to obtain a degree specifically in the field of restoration were extremely limited: only 11 institutions (4%) offered undergraduate degrees, and only four (1%) offered graduate degrees. Half of these programs were established within the last 5 years. Only three programs required more than one course in restoration, and over half did not include any specific core courses in the

social sciences. There were more opportunities to obtain a degree relevant to restoration but not specifically restoration focused: 21% of institutions offered such undergraduate degrees and 12% offered graduate degrees. With regard to courses, only 23% of institutions offered courses that specifically focused on restoration, whereas 43% offered courses that included "restoration" in their description. These trends suggest that although training opportunities are increasing, the current pool of programs and courses that explicitly focus on restoration is not sufficient to meet current demand for qualified and experienced restorationists or to ensure that these scientists and practitioners have the training necessary to meet the complex challenges of restoring degraded ecosystems in the future.

Key words: academic programs, curricula, ecological restoration, education, restoration ecology.

Introduction

The fields of restoration ecology ("the suite of scientific practices that constitute an emergent subdiscipline of ecology") and ecological restoration ("the ensemble of practices involved in the restoration of degraded ecosystems") (Higgs 2005) have matured considerably over the last two decades. The Society for Ecological Restoration, established in 1988, now has circa 2,300 members from 37 countries (SERI 2007). During this time frame, restoration of degraded ecosystems has become a primary focus of natural resource management of both terrestrial and aquatic environments (e.g., Millennium Ecosystem Assessment 2005). Because an increasing number of restoration projects are implemented, there is a corresponding need for trained professionals who understand not only the science of restoration ecology but also the practice of restoring degraded ecosystems and the social factors that lead to

successful project implementation (Allen 2003; Higgs 2005). Employers interested in hiring early-career restoration scientists and practitioners look to academia to provide students with necessary training. Without this training, restorationists may not have the skills necessary to tackle the complex issues associated with recovering degraded ecosystems and, as a result, the success of restoration projects may be compromised.

We surveyed 300 academic institutions in the United States and Canada with research programs in the ecological, conservation, and natural resource sciences to determine whether the quantity and quality of academic programs in the science and practice of restoration are adequate to meet the needs of these growing fields. Specifically, we quantified the number of degree programs and courses with restoration in their title or description, compared availability of curricula among geographic regions and types of academic departments, and assessed the extent to which degree programs require training in both the natural and the social sciences.

Methods

Following the methods of Grant et al. (2007), we identified academic institutions in the United States and Canada with the greatest probability of having expertise in the

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