



Assessing the impacts of military vehicle traffic on natural areas. Introduction to the special issue and review of the relevant military vehicle impact literature

Alan B. Anderson ^{a,*}, Antonio J. Palazzo ^b, Paul D. Ayers ^c,
Jeffrey S. Fehmi ^a, Sally Shoop ^b, Patricia Sullivan ^d

^a US Army ERDC – Construction Engineering Research Laboratory, Champaign, IL 61822, USA

^b US Army ERDC – Cold Regions Research and Engineering Laboratory, Hanover, NH 0375, USA

^c University of Tennessee, Knoxville, TN 37996, USA

^d US Army ERDC – Geotechnical and Structures Laboratory, Vicksburg, MS 39180, USA

Available online 25 February 2005

Abstract

The American Society of Agronomy A-2 Division, Military Land Use and Management, and the International Society for Terrain-Vehicle Systems cosponsored a symposium titled “Assessing the Impacts of Military Vehicle Traffic on Natural Areas”. The symposium was held in Denver, CO on 4 November 2003. The objectives of this symposium were to characterize the types of environmental impacts associated with off-road vehicle use at varying spatial scales, to characterize common study approaches used to quantify vehicle impacts, and to identify knowledge gaps that limit the use of study results in decision-making. A series of papers originating from the symposium characterize the range of impact studies frequently conducted on military installations and the application of study results to typical land management, decision-making processes. This paper summarizes the relationships between these studies, integrates the studies into a larger impact analysis framework, and identifies knowledge gaps that limit application of study results in decision-making processes.

© 2005 ISTVS. Published by Elsevier Ltd. All rights reserved.

* Corresponding author. Tel.: +1 217 352 6511; fax: +1 217 373 7266.

E-mail address: alan.b.anderson@erdc.usace.army.mil (A.B. Anderson).

Keywords: Vehicle impacts; Off-road; Soil; Vegetation; Mobility analysis; Trafficability

1. Introduction

The increasing body of knowledge about the impacts of vehicle traffic on natural areas along with the number and diversity of organizations conducting this kind of research inspired a group of researchers and practitioners to convene and review the current state-of-the-knowledge of off-road vehicle impacts. The objectives of this symposium were not only to characterize the types of impacts associated with off-road vehicle use, with a focus on military use, but also to identify knowledge gaps that limit the use of study results in decision-making. The American Society of Agronomy (ASA) Military Land Use and Management Division (A2) and the International Society for Terrain-Vehicle Systems (ISTVS) cosponsored a symposium titled “Assessing the Impacts of Military Vehicle Traffic on Natural Areas”. The symposium was held in Denver, CO on 4 November 2003 and brought together researchers working in the area of off-road vehicle impacts. Papers in this issue of the *Journal of Terramechanics* were presented at this symposium and were refereed following standard journal procedures.

The papers discuss the range of impact studies currently being conducted on military installations by natural resources and engineering related professionals, and form a substantial foundation of knowledge to date on this topic.

In the late 1970s and early 1980s, the off-road impacts of recreational and military vehicles in natural areas were debated within the environmental community. While military impacts were a concern, the controversy arose largely from the increased recreational use of off-road vehicles on federal lands. The debate surrounding a series of public meetings about the effects of human activities on the California Desert Conservation area, led to the publication of a book by Webb and Wilshire in 1983 [1] titled *Environmental Effects of Off-Road Vehicles: Impacts and Management in Arid Regions*. This book provided the first collection of authoritative information on the physical and biological impacts of vehicles on desert ecosystems. While military vehicle impacts were covered directly in a few chapters and indirectly in others, the information was specific to arid lands, which did not capture the range of ecosystems used for military training or the spatial/temporal impact regimes common to various training activities.

Around the same time that Webb and Wilshire published their book, researchers associated with the US Army Corps of Engineers, Engineer Research and Development Center (ERDC), Construction Engineering Research Laboratory, Champaign (CERL), IL, concluded a series of studies that characterized the ecological effects of military vehicle training on the soils, vegetation, and wildlife of a number of military installations [2–8]. These studies covered a much wider range of ecological communities and military activities than Webb and Wilshire [1]. However, the CERL research was typically observational in nature and the specific activities creating the impacts were largely unknown in their duration, frequency, extent, and vehicle type.

Download English Version:

<https://daneshyari.com/en/article/9711556>

Download Persian Version:

<https://daneshyari.com/article/9711556>

[Daneshyari.com](https://daneshyari.com)