Zentelis & Lindenmayer (2015) contend military training areas (MTAs) “have the potential to make a significant formal contribution to biodiversity conservation,” yet their conservation value has not been rigorously assessed. We believe their paper is an important step in raising awareness of the potential conservation value of MTAs to policy makers, scientists, and conservation professionals. Here, we offer an empirical evaluation of their statements regarding size, distribution, and representation of ecological systems (i.e., vegetation communities) within MTAs for the contiguous United States (CONUS) by comparing MTAs with lands managed by other U.S. federal agencies.

We used lands managed by Department of Defense (DoD) as a proxy for MTAs. By combining the Protected Areas Database of the U.S. (PAD-US; USGS-GAP 2012) and the National GAP Land Cover (USGS-GAP 2011), we determined total number of ecological systems across all units of DoD and other agencies; and proportion of each ecological system that each agency represents across all lands.

DoD lands occur in every state (Figure S1) and represent 467 of 565 total ecological systems within CONUS on 8.1 million hectares (Table S1). This ecological diversity is exceeded only by the National Park Service (NPS), which represents 479 ecological systems across 10.2 million hectares. In contrast, U.S. Forest Service (USFS) and Bureau of Land Management (BLM) lands, despite being 8.5 and 8.6 times larger than DoD lands, represent only 458 and 293 ecosystems, respectively. Therefore, even though DoD lands comprise only 5% of the total area of federal lands, they represent 82.6% of the diversity.
of ecological systems, whereas USFS and BLM comprise 42% and 43% of the total federal land area, but neither represents as much diversity as DoD lands. Similarly, Stein et al. (2008) found DoD lands disproportionately represented more imperiled species (e.g., vascular plants) per unit area than other federal lands.

DoD lands also contribute to total representation of ecological systems on federal lands, as three ecological systems occur on DoD lands only. These ecological systems are relatively rare (i.e., occur on <10,000 hectares throughout CONUS) and have >50–100% of their area on federal lands within DoD. Similar to other federal agencies, the majority of ecological systems have <10% of their entire or federal distribution within DoD lands (Figure S2, USFS is an exception). As part of the entire collective of federal lands, DoD lands increase federal representation of 50 ecological systems by >5% (Figure S3).

Our results are likely a consequence of a mandate that DoD lands be intentionally distributed across the U.S. to train the military under a variety of geographic conditions. They contrast with lands managed by BLM, NPS, USFS, and U.S. Fish and Wildlife Service (FWS), which have been obtained through various opportunities and agency-specific conservation priorities (Aycrigg et al. 2013) and not specifically established to maximize biological diversity (Scott et al. 2001). Our empirical analysis of DoD lands within CONUS support the contentions of Zentelis & Lindenmayer (2015) that DoD lands (i.e., MTAs) contribute to biodiversity conservation and should be considered a conservation asset.

Supporting Information

Additional Supporting Information in tables and figures may be found in the online version of this article at the publisher’s web site:

Table S1. Total area (in hectares), number (i.e., gamma diversity across all units), and unique number of ecological systems within CONUS among federal agencies. DoD lands (our proxy for MTAs) are the second most diverse federal land management agency, second only to the NPS, which contains over 27% more area. We excluded developed land and open water. These data are based on the Protected Areas Database of the United States (PAD-US; USGS-GAP 2012).

Figure S1. Department of Defense lands in the contiguous United States. We excluded developed land and open water. Lines were thickened to increase visibility of smaller areas. These data are based on the Protected Areas Database of the United States (PAD-US; USGS-GAP 2012).

Figure S2. Number of ecological systems in each federal land category shown by percent area of the range (i.e., total area in CONUS) of each ecological system (top) and shown by percent area across all federal lands for those ecological systems (bottom). Our federal land categories are Department of Defense (DoD), Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (FWS), U.S. Forest Service (USFS), National Park Service (NPS), and other federal lands (Other fed). We excluded developed land and open water. Based on the Protected Areas Database of the United States (PAD-US; USGS-GAP 2012).

Figure S3. The distribution of the contribution of Department of Defense (DoD) lands to representation of ecological systems within CONUS. We calculated representation (i.e., area of each ecosystem on all federal lands / total area of each ecosystem across CONUS × 100) for each ecological system when excluding DoD lands in the federal collective and including DoD lands. The difference in representation between exclusion and inclusion of DoD lands is considered the contribution of DoD lands to representation for all 565 ecosystems occurring within CONUS. One ecological system that increased in representation to >50.1% when including DoD lands is not visible. We excluded developed land and open water. Based on the Protected Areas Database of the United States (PAD-US; USGS-GAP 2012).

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