Using plant invasions to compare occurrence- and abundance-based calculations of biotic homogenization: are results complementary or contradictory?

D.M. Buonaiuto1,2,a, David Barnett3,b, Dana M. Blumenthal4,c, Andrea N. Nebhut5,6,d, Ian S. Pearse7,e, Helen R. Sofaer8,f, Cascade J.B. Sorte9,g, Jeffrey D. Corbin10,h, Regan Early11,i, Magda Garbowski12,j, Ines Ibanez13,k, Daniel C. Laughlin14,l, Laís Petri15,16,m, Montserrat Vilà17,18,n, Bethany A. Bradley1,2,o

1Department of Environmental Conservation, University of Massachusetts, Amherst, Massachusetts, 01003 USA

2Northeast Climate Adaptation Science Center, University of Massachusetts, Amherst, MA 01003 USA

3Battelle, National Ecological Observatory Network, Boulder, Colorado, USA

4Rangeland Resources & Systems Research Unit, USDA- Agricultural Research Service, Fort Collins, CO 80526 USA

5Department of Biology, Stanford University, Stanford, CA 94305 USA

6Department of Global Ecology, Carnegie Institution for Science, Stanford, CA 94305 USA

7U.S. Geological Survey, Fort Collins Science Center, Fort Collins, CO 80526 USA

8U.S. Geological Survey, Pacific Island Ecosystems Research Center, Hawaiʻi National Park, HI 96718 USA

9Department of Ecology and Evolutionary Biology, University of California, Irvine, CA 92697 USA

10Department of Biological Sciences, Union College, Schenectady, NY 12309 USA

11Centre for Ecology and Conservation, University of Exeter, Penryn Campus, Penryn, Cornwall, TR10 9FE, UK

12Animal and Range Sciences, New Mexico State University, Las Cruces, New Mexico, 88001 USA

13 School for environment and Sustainability, University of Michigan, Ann Arbor, MI 48109 USA

14DCL: Department of Botany, University of Wyoming, Laramie, WY 82071 USA

15Department of Plant Biology, Michigan State University, East Lansing, MI, 48824 USA

16Ecology, Evolution and Behavior Program, Michigan State University, East Lansing, MI 48824, USA

17Estación Biológica de Doñana (EBD-CSIC), 41092 Sevilla, Spain;

18Department of Plant Biology and Ecology, Universidad de Sevilla, 41012 Sevilla, Spain

*acorresponding author*: 617-823-0687; [dbuonaiuto@umass.edu](mailto:dbuonaiuto@umass.edu), ORCID:0000-0003-4022-2591

bORCID:0000-0002-0485-3567

cORCID:0000-0001-7496-0766

dORCID:0000-0002-4245-6722

eORCID:0000-0001-7098-0495

fORCID: 0000-0002-9450-5223

gORCID: 0000-0003-0952-951X

hORCID: 0000-0002-3377-5916

iORCID: 0000-0003-4108-5904

j

kORCID: 0000-0002-1054-0727

l

mORCID: 0000-0001-9727-1939

nORCID:00000-0003-3171-8261

oORCID:0000-0003-4912-4971

Acknowledgements: This work is a product of the John Wesley Powell Center for Analysis and Synthesis Working Group on Invasive Plant Impacts. Additional support was provided by the National Science Foundation through Interagency Agreement #2135795 to the Powell Center. Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government. Additional support was provided by the U.S. Geological Survey, Northeast Climate Adaptation Science Center (NE CASC) through Grants No. G19AC00091 and G21AC10233-01

Biosketch: The authors of this study are part of an international team of researchers dedicated to understanding the impacts of invasive species on a diversity of ecological communities.

TITLE:

Using plant invasions to compare occurrence- and abundance-based calculations of biotic homogenization: are results complementary or contradictory?

RUNNING TITLE:

Comparing methods for calculating biotic homogenization