**Title: Protected area planning to conserve biodiversity in an uncertain future**

**Article Impact Statement:** Accounting for governance, land use and climate risks will result in more resilient and effective conservation effort for biodiversity.

**Keywords:** biodiversity, protected areas, optimization, risk, governance, land use, climate change

**Word count**: 4178

**Authors:** Richard Schuster 1,2\*, Rachel Buxton1, Jeffrey O. Hanson1, Allison D. Binley1, Jeremy Pittman3, Vivitskaia Tulloch4, Frank A. La Sorte5, Patrick R. Roehrdanz6, Peter H. Verburg7, Amanda D. Rodewald5,8, Scott Wilson1,9, Hugh P. Possingham10, Joseph R. Bennett1

**Affiliations:**

1 Department of Biology, 1125 Colonel By Drive, Carleton University, Ottawa ON, K1S 5B6 Canada.

2 Nature Conservancy of Canada, 245 Eglinton Ave East, Suite 410, Toronto, Ontario, M4P 3J1, Canada.

3 School of Planning, University of Waterloo, 200 University Ave W, Waterloo, ON, N2T 3G1, Canada

4 Conservation Decisions Lab, Department of Forest and Conservation Sciences, 2424 Main Mall, Vancouver, BC V6T 1Z4, Canada.

5 Cornell Lab of Ornithology, Cornell University, Ithaca, NY 14850, USA

6 Conservation International, 2100 Crystal Drive #600, Arlington, VA 22202, USA

7 Institute for Environmental Studies, VU University Amsterdam, Amsterdam, The Netherlands

8 Department of Natural Resources and the Environment, Cornell University, Ithaca, NY 14853, USA.

9 Wildlife Research Division, Environment and Climate Change Canada, 1125 Colonel By Drive, Ottawa, Ontario, Canada, K1S 5B6

10 Centre for Biodiversity and Conservation Science, University of Queensland, St Lucia, Queensland 4067, Australia

\***Corresponding author**. Email: [richard.schuster@glel.carleton.ca](mailto:richard.schuster@glel.carleton.ca)

**Acknowledgments:** We thank Alison Johnston, Peter Arcese, Steven Cooke and Lenore Fahrig for helpful discussions. RS was funded by the Liber Ero Fellowship Program. JRB was funded by the Natural Science and Engineering Research Council of Canada (NSERC) Discovery Grant 2016-06147 and Environment and Climate Change Canada Grant GCXE19S058.

**Competing interests:** The authors declare no competing interests.

**Data and materials availability:** All data, scripts and full results are available on Open Science Framework (OSF) and will be assigned a DOI once the manuscript is in print: <https://osf.io/e2fuw/?view_only=46eb2e525daf42d29df318a92762d885>