

# Stanford

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## Peter Vitousek

Clifford G. Morrison Professor in Population and Resource Studies, Senior Fellow at the Woods Institute for the Environment and Professor, by courtesy, of Earth System Science

Biology

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### Bio

#### ACADEMIC APPOINTMENTS

- Professor, Biology
- Professor, Biology
- Senior Fellow, Stanford Woods Institute for the Environment
- Professor (By courtesy), Earth System Science
- Senior Fellow, Stanford Woods Institute for the Environment

#### PROGRAM AFFILIATIONS

- Center for East Asian Studies
- Center for Latin American Studies

#### LINKS

- My Lab Site: <http://www.stanford.edu/group/Vitousek/>

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### Research & Scholarship

#### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Please see 'Short research description.'

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### Teaching

#### COURSES

##### 2018-19

- Biology and Global Change: BIO 117, EARTHSYS 111, ESS 111 (Win)
- Ecology of the Hawaiian Islands: BIO 116, EARTHSYS 116 (Aut)

##### 2017-18

- Capstone Project Seminar in Environment and Resources: ENVRES 290 (Aut, Win)
- Graduate Practicum in Environment and Resources: ENVRES 270 (Aut, Win)

##### 2016-17

- Biology and Global Change: BIO 117, EARTHSYS 111, ESS 111 (Win)
- Capstone Project Seminar in Environment and Resources: ENVRES 290 (Aut, Win)

- Earth Sciences of the Hawaiian Islands: EARTH 117, EARTHSYS 117, ESS 117 (Aut)
- Ecology of the Hawaiian Islands: BIO 116, EARTHSYS 116 (Aut)
- Graduate Practicum in Environment and Resources: ENVRES 270 (Aut, Win, Spr, Sum)
- Plant Biology, Evolution, and Ecology: BIO 43 (Spr)
- Research Approaches for Environmental Problem Solving: ENVRES 330 (Spr)

#### 2015-16

- Biology and Global Change: BIO 117, EARTHSYS 111, ESS 111 (Win)
- Capstone Project Seminar in Environment and Resources: ENVRES 290 (Aut, Win)
- E-IPER Current Topics Seminar: ENVRES 225 (Aut, Win, Spr)
- Graduate Practicum in Environment and Resources: ENVRES 270 (Aut, Win, Spr, Sum)
- Plant Biology, Evolution, and Ecology: BIO 43 (Spr)
- Research Approaches for Environmental Problem Solving: ENVRES 330 (Spr)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Grayson Badgley, Laura Bogar, Devin McMahon

#### Doctoral Dissertation Advisor (AC)

Lizzie Paulus

#### Master's Program Advisor

Daela Taeoaliꞏi-Tipton

#### Doctoral (Program)

Randall Holmes, Lizzie Paulus, Samy Sekar

### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biology (School of Humanities and Sciences) (Phd Program)

### Publications

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#### PUBLICATIONS

- **Evidence for a historic change occurring in China** *Environmental Science and Technology*  
Liu, X., Vitousek, P., Chang, Y., Zhang, W., Matson, P., Zhang, F.  
2016; 50: 505-506
- **Long-term effects of agriculture on soil carbon pools and carbon chemistry along a Hawaiian environmental gradient** *4th Conference on the Mechanisms of Organic Matter Stabilization and Destabilization (SOM) - Organic Matter Stabilization and Ecosystem Functions*  
Cusack, D. F., Chadwick, O. A., Ladefoged, T., Vitousek, P. M.  
SPRINGER.2013: 229-43
- **Biological nitrogen fixation: rates, patterns and ecological controls in terrestrial ecosystems.** *Philosophical transactions of the Royal Society of London. Series B, Biological sciences*  
Vitousek, P. M., Menge, D. N., Reed, S. C., Cleveland, C. C.  
2013; 368 (1621): 20130119-?
- **Fungal endophyte communities reflect environmental structuring across a Hawaiian landscape** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Zimmerman, N. B., Vitousek, P. M.  
2012; 109 (32): 13022-13027

- **Terrestrial phosphorus limitation: mechanisms, implications, and nitrogen-phosphorus interactions** *ECOLOGICAL APPLICATIONS*  
Vitousek, P. M., Porder, S., Houlton, B. Z., Chadwick, O. A.  
2010; 20 (1): 5-15
- **Landscape-level variation in forest structure and biogeochemistry across a substrate age gradient in Hawaii** *ECOLOGY*  
Vitousek, P., Asner, G. P., Chadwick, O. A., Hotchkiss, S.  
2009; 90 (11): 3074-3086
- **Sources of nutrients to windward agricultural systems in pre-contact Hawai'i** *ECOLOGICAL APPLICATIONS*  
Palmer, M. A., Graves, M., Ladefoged, T. N., Chadwick, O. A., Duarte, T. K., Porder, S., Vitousek, P. M.  
2009; 19 (6): 1444-1453
- **Agriculture. Nutrient imbalances in agricultural development.** *Science*  
Vitousek, P. M., Naylor, R., Crews, T., David, M. B., Drinkwater, L. E., Holland, E., Johnes, P. J., KATZENBERGER, J., Martinelli, L. A., Matson, P. A., Nziguheba, G., Ojima, D., Palm, et al  
2009; 324 (5934): 1519-1520
- **Contrasting Predictors of Fern versus Angiosperm Decomposition in a Common Garden** *BIOTROPICA*  
Amatangelo, K. L., Vitousek, P. M.  
2009; 41 (2): 154-161
- **Stoichiometry of ferns in Hawaii: implications for nutrient cycling** *OECOLOGIA*  
Amatangelo, K. L., Vitousek, P. M.  
2008; 157 (4): 619-627
- **A unifying framework for dinitrogen fixation in the terrestrial biosphere** *NATURE*  
Houlton, B. Z., Wang, Y., Vitousek, P. M., Field, C. B.  
2008; 454 (7202): 327-U34
- **Invasive plants transform the three-dimensional structure of rain forests** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Asner, G. P., Hughes, R. F., Vitousek, P. M., Knapp, D. E., Kennedy-Bowdoin, T., Boardman, J., Martin, R. E., Eastwood, M., Green, R. O.  
2008; 105 (11): 4519-4523
- **Development of a diverse epiphyte community in response to phosphorus fertilization** *ECOLOGY LETTERS*  
Benner, J. W., Vitousek, P. M.  
2007; 10 (7): 628-636
- **Resource-use efficiency and plant invasion in low-resource systems** *NATURE*  
Funk, J. L., Vitousek, P. M.  
2007; 446 (7139): 1079-1081
- **Business strategies for conservation on private lands: Koa forestry as a case study** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Goldstein, J. H., Daily, G. C., Friday, J. B., Matson, P. A., Naylor, R. A.  
2006; 103 (26): 10140-10145
- **Agricultural intensification: Will land spared from farming be land spared for nature?** *CONSERVATION BIOLOGY*  
Matson, P. A., Vitousek, P. M.  
2006; 20 (3): 709-710
- **Persistence of rock-derived nutrients in the wet tropical forests of La Selva, Costa Rica** *ECOLOGY*  
Porder, S., Clark, D. A., Vitousek, P. M.  
2006; 87 (3): 594-602
- **Ground-based and remotely sensed nutrient availability across a tropical landscape** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Porder, S., Asner, G. P., Vitousek, P. M.  
2005; 102 (31): 10909-10912

- **Remote analysis of biological invasion and biogeochemical change** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Asner, G. P., Vitousek, P. M.  
2005; 102 (12): 4383-4386
- **Erosion and landscape development affect plant nutrient status in the Hawaiian Islands** *OECOLOGIA*  
Porder, S., Paytan, A., Vitousek, P. M.  
2005; 142 (3): 440-449
- **Interactive effects of elevated CO<sub>2</sub>, N deposition and climate change on plant litter quality in a California annual grassland** *OECOLOGIA*  
Henry, H. A., Cleland, E. E., Field, C. B., Vitousek, P. M.  
2005; 142 (3): 465-473
- **Imaging spectroscopy studies of Hawaiian ecosystems, carbon properties, and disturbance** *Conference on Image Processing and Pattern Recognition in Remote Sensing II*  
Asner, G. P., Vitousek, P. M.  
SPIE-INT SOC OPTICAL ENGINEERING.2005: 1-8
- **Rapid nutrient cycling in leaf litter from invasive plants in Hawai'i** *OECOLOGIA*  
Allison, S. D., Vitousek, P. M.  
2004; 141 (4): 612-619
- **Soils, agriculture, and society in precontact Hawai** *SCIENCE*  
Vitousek, P. M., Ladefoged, T. N., Kirch, P. V., Hartshorn, A. S., Graves, M. W., Hotchkiss, S. C., Tuljapurkar, S., Chadwick, O. A.  
2004; 304 (5677): 1665-1669
- **Nitrogen and nature** *2nd International Nitrogen Conference*  
Vitousek, P. M., Hattenschwiler, S., Olander, L., Allison, S.  
ROYAL SWEDISH ACAD SCIENCES.2002: 97-101
- **The role of polyphenols in terrestrial ecosystem nutrient cycling** *TRENDS IN ECOLOGY & EVOLUTION*  
Hattenschwiler, S., Vitousek, P. M.  
2000; 15 (6): 238-243
- **Nitrous oxide flux following tropical land clearing** *Global Biogeochemical Cycles*  
Luizao, F., Matson, P., Livingston, G., Luizao, R., Vitousek, P.  
1989; 3: 281-285
- **INTRODUCED SPECIES IN HAWAII - BIOLOGICAL EFFECTS AND OPPORTUNITIES FOR ECOLOGICAL RESEARCH** *TRENDS IN ECOLOGY & EVOLUTION*  
Vitousek, P. M., Loope, L. L., STONE, C. P.  
1987; 2 (7): 224-227
- **Cross-system comparisons of soil nitrogen transformations and nitrous oxide flux in tropical forest ecosystems** *Global Biogeochemical Cycles*  
Matson, P. A., Vitousek, P. M.  
1987; 1: 163-170