

March 14-15, 2024

ITEM 211-1003-R0324

Request for Authorization to Confer the Title of Professor Emeritus of Department of Ecosystem and Conservation Sciences on Diana Six; The University of Montana-Missoula

THAT

Upon the retirement of Diana L. Six from the faculty of The University of Montana, the faculty of the Department of Ecosystem and Conservation Sciences wishes to express its appreciation for her 26 years of dedicated service to the University and the State of Montana by recommending that the rank of Professor Emeritus be conferred upon her by the Board of Regents of the Montana University System.

EXPLANATION

Dr. Six has degrees in Microbiology, Integrated Pest Management, and Entomology (with a co-emphasis on mycology and plant pathology). She received her PhD from UC, Riverside, and was a postdoctoral fellow in chemical ecology at UC, Berkeley before moving to UM. She developed and taught 6 undergraduate and 9 graduate courses (6 required) while at UM. Her teaching evaluations were consistently excellent. Additionally, she mentored many graduate and undergraduate students in research including several Native Americans via the Bridges Program. Three of her graduate students went on to become science faculty (Allison Hansen, University of California Riverside, working on the effects of small RNA on controlling insect pests via targeting their symbionts; Ryan Bracewell, Indiana University, working on evolution of insects including symbioses with bark beetles and how chromosomal changes influence survival and fitness of insects with a variety of life histories; Kristen Waring, Northern Arizona University working in silviculture and genetics of forests under pressure of fire suppression, invasive pathogens, climate change, and bark beetles, among many other forest management issues). Others still are working in private industry or government agencies in fields related to forest health and/or leading research groups on bark beetles or forest pathology. Among these are USA: Cyndi Snyder USFS FHP Entomology (CA), Maria Newcomb USFS FHP Pathology (UT), Kjerstin Skov, USFS (UT) Entomology, Canada: Forestry Canada Bark Beetle Group Leader Kathy Bleiker, New Zealand: Forestry industry consultant Johan Vander Linde; Edith Dooley, Forest Analyst, Mason, Bruce, and Girard, Inc.)

Dr. Six has conducted outstanding and high impact research on bark beetles, symbiosis, and climate change adaptation in forests in multiple countries including the USA, South Africa, Zimbabwe, Mexico, and Germany. In her investigations, Dr. Six has applied her broad education to improving our understanding of forest ecosystems using an holistic approach. Her pioneering work on bark beetle fungus symbioses has shown that some, including mountain pine beetle, depend on fungi for the crucial elements they need for development and reproduction and that temperature can determine the efficacy of the fungi in supporting the beetle with strong effects on survival and outbreak development. Further, in the process, these fungi deplete nutrients in the sapwood reducing their suitability for decay fungi. Preliminary data suggests that the removal of nitrogen and phosphorus by the fungi greatly slows decay and rates of carbon release. These actions of the fungi, in combination with increased regeneration, may account for lower than expected rates of carbon release from beetle-affected forests post-outbreak (ongoing research). Her work on climate adaptation has found a genetic basis for tree survival during outbreaks of mountain pine beetle in both lodgepole and whitebark pine. These resistant trees also have genetically determined differences in growth rates that not only influence beetle choice or rejection but may also increase the trees' adaptive capacity to a warmer and drier climate. Because beetle resistance and drought tolerance in these trees is genetically based, it is heritable allowing these traits to be exploited for conserving forests as environmental conditions shift over time. Work in Africa has focused on detecting invasive beetles and on

how climate change and land use affects insect and pathogen damage in native and plantation trees. Work in US and Germany includes studies on how to maintain or recover biodiversity in natural and working forests via structural shifts and manipulation of dead wood. Other work in Germany focuses on the ecology of the European spruce beetle as well as native and invasive ambrosia beetles to better understand their responses to warming and novel environments. These are only a very few examples of Dr. Six' research accomplishments and impact.

Dr. Six is an internationally respected leader in her field and is currently an Extraordinary Professor of Ecology at the University of Pretoria, South Africa, where she conducts research and co-advises graduate students, and a Mercator Fellow for the DFG Beta-4 Project on biodiversity being conducted across 13 national and working forests in Germany. She has published over 90 scientific papers and has been cited nearly 5,000 times. Recent awards include The Steven Running Research Award (FCFC) (2023) and the E.O. Wilson Award for transformative work in the adaptation of forests to bark beetles and climate change (2018). She was inducted as a Fellow of the Royal Entomological Society in 2019. Additionally, she served as an author of the National Academies of Science, Engineering, and Medicine report *Forest Health and Biotechnology: Possibilities and Considerations*. Currently, she is lead for the mountain pine beetle section of the FWS Endangered Species Act Recovery Plan for the threatened whitebark pine. These are only a few highlights of a diverse and impactful research career focusing on the conservation of forests in Montana, the US, and globally.

Dr. Six has served the university, state, country, and global citizenry in numerous ways. She served in many capacities in the FCFC including chair of the Department of Ecosystem and Conservations Sciences and associate dean of graduate programs. She has served on a diversity of University committees including grievance, unit standards, and faculty senate. She has served on numerous search committees including for the FCFC dean and UM president. Beyond UM, she has been an officer in several scientific societies including IUFRO (the International Union of Forest Research Organizations) and on boards for several large European Union forest research projects and has served on the board of directors for the Centre of Excellence for Plant Health Biotechnology in South Africa since its inception in 2014. She is very active in science communication and sci-art, as is leading several initiatives at UM and the University of Pretoria for translating science and important forest issues to the public. A few venues through which her research has been disseminated include a Ted Talk, a National Geographic short film and full feature article, a full feature film on forest biodiversity in Germany (along with Jane Goodall), front page coverage in the New York Times, Main feature in the Guardian and in the Showtime series *The Years of living Dangerously*. These, again, are only highlights of a large array of service efforts that Dr. Six has led or participated in.

The Department is pleased to unanimously and enthusiastically nominate Professor Six for emeritus status upon her retirement in December 2023.

ATTACHMENTS

None