ECOSYSTEM EARTH

By Sacha Vignieri and Julia Fahrenkamp-Uppenbrink
An ecosystem consists of communities of interacting species and the physical environment on which they depend. Although it is well accepted that Earth consists of many different ecosystems, human societies much less readily recognize that Earth itself is an ecosystem, dependent on interacting species and consisting of finite resources. As the human population has grown and increasingly dominated available resources, “ecosystem Earth” has begun to show increasing signs of stress. Loss of biodiversity, environmental degradation, and conflict over resources among the dominant species are typical signs that a biological system is nearing a state change, which could range from collapse of the dominant species, to development of alternative biological communities, to collapse of the entire system. In this special issue, we identify our impacts on ecosystem Earth, seek to understand the barriers to change, and explore potential solutions. Decades of research on ecosystem dynamics can help to guide our thinking about a sustainable future. Bottom-up reductions in human population growth and resource consumption, changes to how we think about our place in the system, and a willingness to prioritize persistence of the other species within our biological community will lead to a healthier planetary ecosystem. It is essential that humanity begins to better appreciate our role as just one part of a large and interdependent biological community. Our ability to dominate the planet’s resources makes us directly responsible for determining the future of the ecosystem on which we, and all other forms of life, depend.