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Ecosystem services and the value of arboreal squirrels in our changing world: multiple roles within the forest

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The World's forests are estimated to cover only half of their historical distribution and only 22% of forests remaining untouched in their primary condition. Current rates of forest loss worldwide are still about 1% per decade with annual loss rates of 2% occurring in tropical regions of the Americas and Asia. Over 150 species of arboreal squirrel are recognized across the globe, with the greatest diversity in the rapidly changing tropical forests. Arboreal squirrels possess a diverse array of adaptations to the forest environment in which the lineage has evolved for millions of years. From morphological features that permit navigation through the canopy to behavioral repertoires that maximize the ability to exploit successfully the seasonal energy sources produced by forests, arboreal squirrels possess a fascinating array of answers to solve the complex challenges presented by forests. What is often less appreciated are the important services that squirrels provide through their role within forests. After reviewing important adaptations of arboreal squirrels for life in the forest, I will examine these ecosystem services that squirrels provide as a result of their interactions within the forest ecosystem. Squirrels

disperse seeds, pollen, and spores, serve as prey to many species including humans, influence forest structure and recovery, function as indicators of forest change among a plethora of other roles. Finally, our lack of knowledge and the precarious conservation status of arboreal squirrels will be highlighted in relation to the important ecosystem services that are provided.