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*Abstract*

# Spider Webs as eDNA Tool for Biodiversity Assessment of Life's Domains †

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**Abstract:** Sampling of environmental DNA (eDNA), coupled with state-of-the-art molecular detection approaches, can potentially overcome many limitations of traditional biodiversity monitoring. The concept of eDNA utilizes nucleic acids of organisms directly from the environment. Recent studies have detected a wide spectrum of prokaryotic and eukaryotic eDNA from a variety of environments, which are ancient or modern, terrestrial or aquatic. The numerous sources of eDNA promise to establish this approach as a tool for diverse scientific settings. Here, we propose and establish spider webs as a source of eDNA with far reaching implications. First, in a field study, we tracked specific arthropod targets from different type of spider webs. Second, we used high-throughput amplicon sequencing of taxonomic barcodes to investigate the utility of eDNA from spider webs for biodiversity monitoring of animals, fungi and bacteria. We show that even the smallest target organisms can be detected by their genetic remains on spider webs. We also demonstrate that eDNA from spider webs is useful in community compositions research in different domains of life, and argue that spider webs potentially offer highly detailed temporal and spatial information.