ABSTRACT

THESIS: *Corbicula fluminea* as a bioindicator of microplastic pollution in streams in East Central Indiana

STUDENT: Emily Dewig

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Plastic pollution is a threat to the structure and function of aquatic and terrestrial ecosystems because of its lightweight, durable, and indestructible characteristics. Plastic rarely decomposes completely from natural processes, ultimately contributing to the creation of potentially toxic microplastic particles. Microplastics, which are small or fragmented plastic items that are less than 5 mm in diameter, have been observed in both aquatic and terrestrial ecosystems. Recent studies have recognized potential environmental and health hazards associated with the increasing distribution and fragmentation of microplastics in aquatic systems. Some species of bivalves, because of their ability to filter feed and their position in the food web, have been used to assess the effects of contaminants on the overall quality of their environment through the process of bioaccumulation. Furthermore, the formation, transportation, and accumulation of microplastics in the environment may establish pathways for the biomagnification of harmful contaminants in organisms at higher trophic levels, such as humans. It is necessary to identify the internal exposure levels of microplastic in aquatic organisms to fully understand their ecological impacts. This study aimed to determine the prevalence, sizes,

colors, and types of microplastics in freshwater streams in East Central Indiana using the bioindicator species *Corbicula fluminea*. As anticipated, various types, sizes, and colors of microplastics were detected in the soft tissue of *Corbicula fluminea*, suggesting that microplastics can enter the riverine food web via ingestion and accumulation by lower trophic organisms. These results add to the growing information about using common freshwater bivalves for biomonitoring and water quality assessments of emerging contaminants such as microplastics.