Per- and polyfluoroalkyl substances (PFAS) commonly occur in the environment as mixtures that often contain transformable PFAS precursors. During waste-water treatment processes, PFAS become concentrated in municipal biosolids, which are commonly applied to agricultural fields as crop fertilizer. During precipitation events, agricultural biosolid runoff might introduce PFAS into nearby aquatic habitats like farm ponds. 5:3 FTCA and MeFOSAA are PFAS precursors that are frequently detected in municipal biosolids and can occur in biosolids-affected ponds and wetlands based on previous work. Despite being ubiquitous aquatic habitats across the United States, to date, no studies have examined the fate of these precursors in farm ponds, nor their potential effects on community structure or dynamics. Further, while existing studies suggest that vertebrate and invertebrate organisms might differ in their capacities to metabolize PFAS, this hypothesis has not been tested directly. The objectives of this study are 1) to determine the fate of 5:3 FTCA and MeFOSAA in simulated farm pond communities, 2) to compare bioaccumulation and metabolism in vertebrate and invertebrate models, and 3) to assess whether exposure to precursors alters community structure or dynamics. We are presently quantifying PFAS concentrations to determine the in vivo metabolism of PFAS precursors in crayfish (*Faxonius propinquus)* and bluegill (*Lepomis macrochirus*). Our study will help address the lack of available information on if and how two biosolids-associated PFAS precursors enter aquatic food webs and affect aquatic communities after a 60-day exposure, as well as if and how they are metabolized by vertebrate and invertebrate predators.