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Successful surveillance, control and eradication of invasive species rely upon an ability to detect the target species at low densities. However, in aquatic environments few effective monitoring tools exist for many cryptic and difficult to observe species especially for large, deep or fast flow water bodies. Recently environmental DNA collected from water samples has been used to identify the leading edge of the invasion front of bighead and silver carp in the Chicago Area Waterway system. This molecular based surveillance effort places the invasion front at or in Lake Michigan above the electric barriers designed to prevent the invasion of the Great Lakes, and over 40 miles upstream of the area traditional sampling suggested. While there is over a twenty year history of using indirect genetic sampling methods to detect and monitoring species in terrestrial and marine environments, application of environmental DNA (eDNA) methods in freshwater systems is still novel, and translating results into management decisions remains challenging. This presentation will provide an overview of the method, and description of some recent and potential applications of eDNA surveillance monitoring. The strengths and weakness of the method will be discussed within the context of how the approach could usefully be applied to assist in the management of aquatic invasive species.