

Marine Lens Florida Keys: Empowering Participatory Scientists to Explore Marine Habitats via Zooniverse

Kayla R. Merrill, *Travis Lowke, Casey B. Butler, William F. Bigelow, Graysen D. Boehning, Adam Neuse, Danielle Morley, Thomas R. Matthews*

Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute, Marathon, FL, USA

The Florida Fish and Wildlife Conservation Commission (FWC) increasingly utilizes underwater video technology to study animal behavior, habitat use, and spawning events in Florida's marine ecosystems. Advances in camera and battery technology now enable continuous, multi-day deployments, that capture detailed ecological data with minimal disturbance to cryptic species. While this expanded data collection enhances ecological insights, it also generates substantial video footage, making the identification of rare but critical events, such as fish spawning aggregations or predation, highly labor intensive. To address this challenge, the FWC's Fish and Wildlife Research Institute (FWRI) has launched pilot projects leveraging the Zooniverse participatory science platform. Through Zooniverse, multiple online participants identify animals, behaviors, and maximum number of each species in the videos. The two pilot projects currently focus on characterizing fish spawning aggregations in the Lower Florida Keys and measuring diversity and abundance of fish and invertebrates at solution holes, the karst rock depressions and dominate structural feature in Florida Bay and the Lower Keys. This participatory approach not only accelerated data processing, but it also provides an opportunity for individuals to engage in important conservation efforts as well as plays a critical role in fostering public awareness and appreciation of Florida's marine habitats. This initiative aims to reduce the burden of researchers but also strengthens the connections between the public and marine science. By comparing crowd-sourced data against expert-reviewed footage, the project validates the reliability of this collaborative approach while advancing habitat conservation efforts. Overall, this innovative project supports evidence-based management, conservation of Florida's marine ecosystems, and broadens public awareness of the importance of these critical habitats.