

Tracking Sea Turtles with Photos: A Citizen Science Photo-ID Initiative in the Florida Keys

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Understanding the movement and site fidelity of sea turtles is critical for effective conservation, particularly in heavily visited reef ecosystems like those of the Florida Keys. Traditional methods for monitoring individual turtles, such as tagging or telemetry, can be invasive, costly, and logistically complex. To address these challenges, we launched a novel photo-identification (photo-ID) project that combines citizen science and machine learning to monitor individual sea turtles in a non-invasive, cost-effective manner. Divers and snorkelers are invited to submit photographs of sea turtles encountered during their time on the reef. Submitted images are processed using software that employs machine learning algorithms to identify individuals based on the unique scale patterns on the sides of their heads—akin to a fingerprint. This approach allows us to build a growing catalog of identified turtles and track their presence, re-sightings, and movement patterns over time. While data collection is ongoing, the project has already garnered strong interest from the diving community and has established a workflow for photo submission, quality control, and image processing. This framework creates the foundation for a scalable, community-powered monitoring program with the potential to improve our understanding of turtle residency, movement, and site fidelity across the Keys. Our poster will outline the project design, software tools, citizen engagement strategies, and future plans for data analysis and ecological interpretation. This work demonstrates how emerging technologies, and public participation can be combined to advance sea turtle research and conservation in dynamic reef environments.