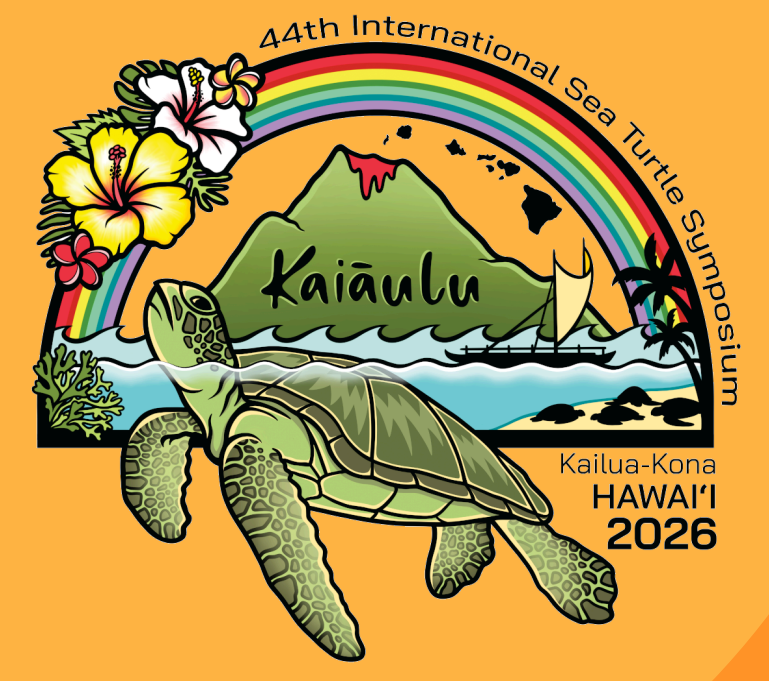


PLAY, LEARN, CONSERVE: GAMIFYING PHOTO-IDENTIFICATION TO ENGAGE THE PUBLIC IN SEA TURTLE CONSERVATION

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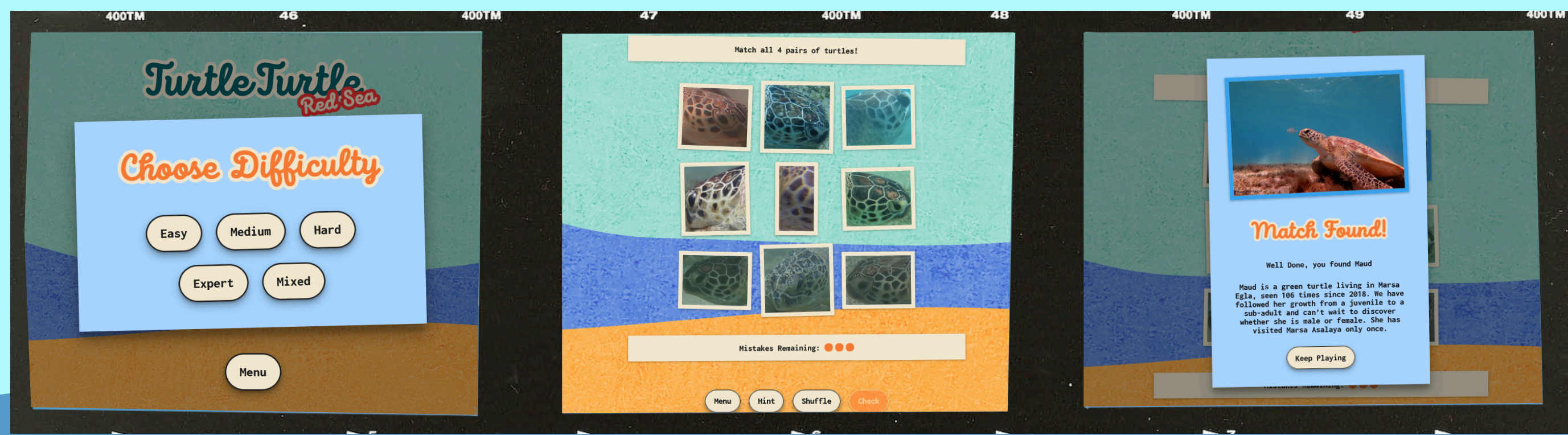
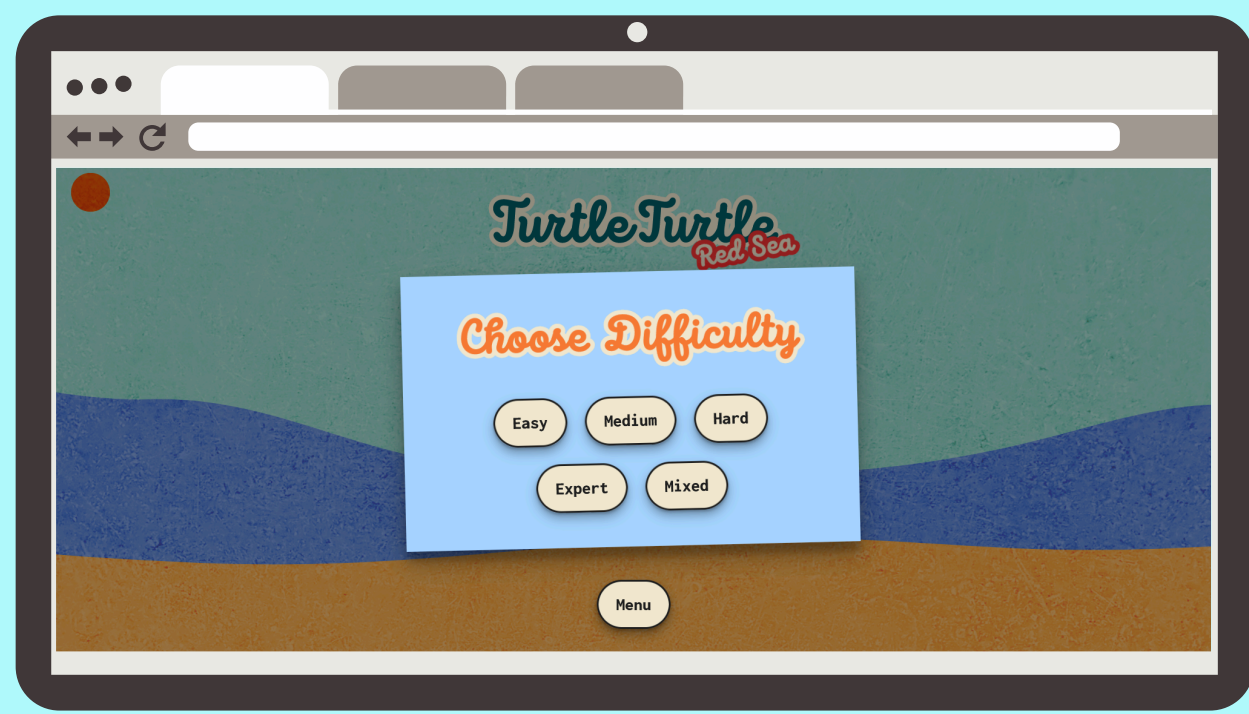
INTRODUCTION

Bridging the gap between rigorous scientific research and public engagement remains a significant challenge. While Photo-Identification (Photo-ID) is a cornerstone of monitoring, the complexity of manual scute-pattern matching is often perceived as inaccessible. This leads to a "data-disconnect," where citizen scientists submit photos without grasping how they transform into vital life-history data.

THE SOLUTION: GAMIFICATION

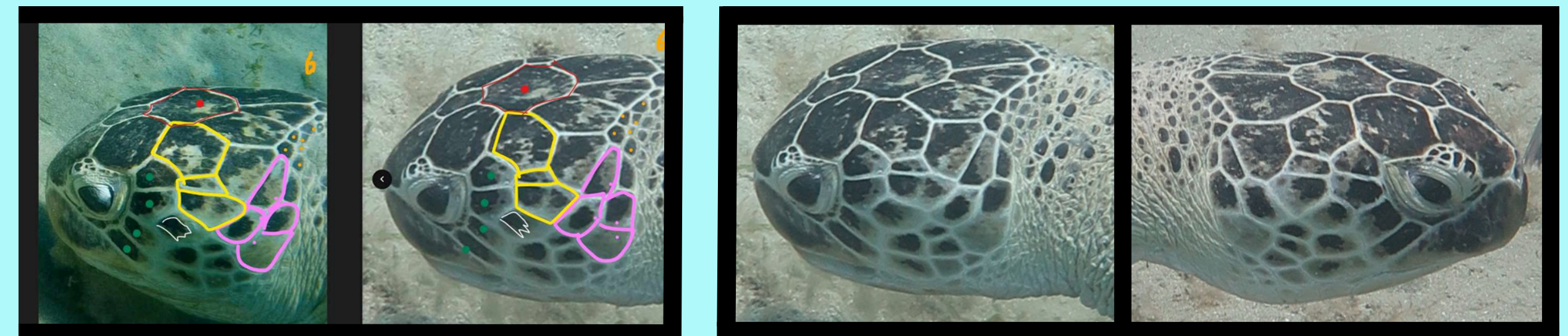
The TurtleTurtle initiative uses gamification—applying game-design elements to scientific research—to engage the public in sea turtle conservation. The original TurtleTurtle platform (<https://turtleturtle.fun>), launched in August 2025, is based on long-term datasets from Zakynthos, Greece. The Red Sea version (<https://red-sea.turtleturtle.fun>), launched in January 2026, adapts the same concept to local Green and Hawksbill turtle populations, incorporating region-specific challenges and conservation messages.

- 1 Demystify Scientific Methods:** Training users to recognize individual facial scales.
- 2 Foster Empathy:** Connecting players with real individuals (e.g., Zakynthos loggerheads or Red Sea green and hawksbill turtles) through storytelling.
- 3 Enhance Data Quality:** Educating citizen scientists on the importance of image clarity and orientation, directly improving the quality of future data submissions.



HOW DOES IT WORK?

- Data Collection:** Real-world sea turtle photographs sourced from the TurtleWatch Egypt 2.0.
- Photo Matching:** Players identify individual sea turtles by their unique facial scale patterns (left and right sides).
- Levels & Challenges:** The game includes four difficulty levels - Easy, Medium, Hard, and Expert - which vary based on image quality, head orientation, and species (the last one only in the Red Sea version: Green turtles are generally easier to match, while Hawksbill turtles present more challenges).
- Feedback & Learning:** Successful matches unlock biographical "stories" about each turtle, covering their behavior, habitat, and specific conservation threats.



Example photographs of the same individual sea turtle ("Marika"). Facial scute patterns remain consistent across years, cameras, and observers (left), and show detectable similarities between left and right head profiles (right).

PLAY THE DAILY CHALLENGE!

To encourage community engagement, the platform features a synchronized **Daily Challenge**. **Every 24 hours**, a new set of photo-ID matches is generated for all users worldwide.

SCAN NOW TO PLAY TODAY'S
DAILY CHALLENGE AND TEST
YOUR ID SKILLS!

SCAN
ME!



CAN YOU BEAT THE DAILY TIME?

TurtleTurtle | 03/03/26 | 38.4 s

ASSOCIATED PHOTODATABASES

Zakynthos, Greece (25+ Years):

- Based on the SeaTurtleID2022 dataset (*Caretta caretta*).
- Long-term monitoring of survival rates, social interactions, and ecotourism impacts.

Red Sea, Egypt (15+ Years):

- Powered by TurtleWatch Egypt 2.0 research and citizen science (since 2011).
- High-resolution profiles of Green and Hawksbill turtles, linked to individual life-history and conservation data.



PLAY NOW

www.turtleturtle.fun www.red-sea.turtleturtle.fun

CONCLUSIONS AND NEXT STEPS

- Global Engagement:** Rapidly growing audience and high user retention since launch (TurtleTurtle, Aug 2025; Red Sea version, Jan 2026).
- Bridge to Public Science:** Digital gamification effectively translates complex research into accessible educational tools.
- Open Access Model:** Encourages global conservation projects to repurpose datasets for interactive outreach.
- Future Development:** Database expansion in Greece and the Red Sea, plus real-time feedback integration for citizen scientists.

CREATE A GAME WITH YOUR DATASET!

Do you manage a sea turtle photo-ID project? We can help you transform your dataset into a customized version of the game to boost your outreach and volunteer training.

- Custom Integration:** We can adapt the platform to your specific population and conservation needs.
- Affordable Implementation:** The game's backend code is open-source and freely available. Additional technical support for the development of your version can be provided at a minimal cost.
- Open Source:** Join our mission to make marine science interactive and accessible worldwide.

ACKNOWLEDGEMENTS

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