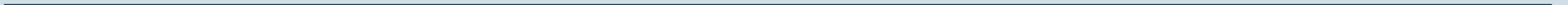




FishingBuddy

- Aparna Chandramouli



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- Introduction
- Architecture Diagram
- Tech stack
- Features Overview
- Security, Privacy and Identity
- Future Enhancements

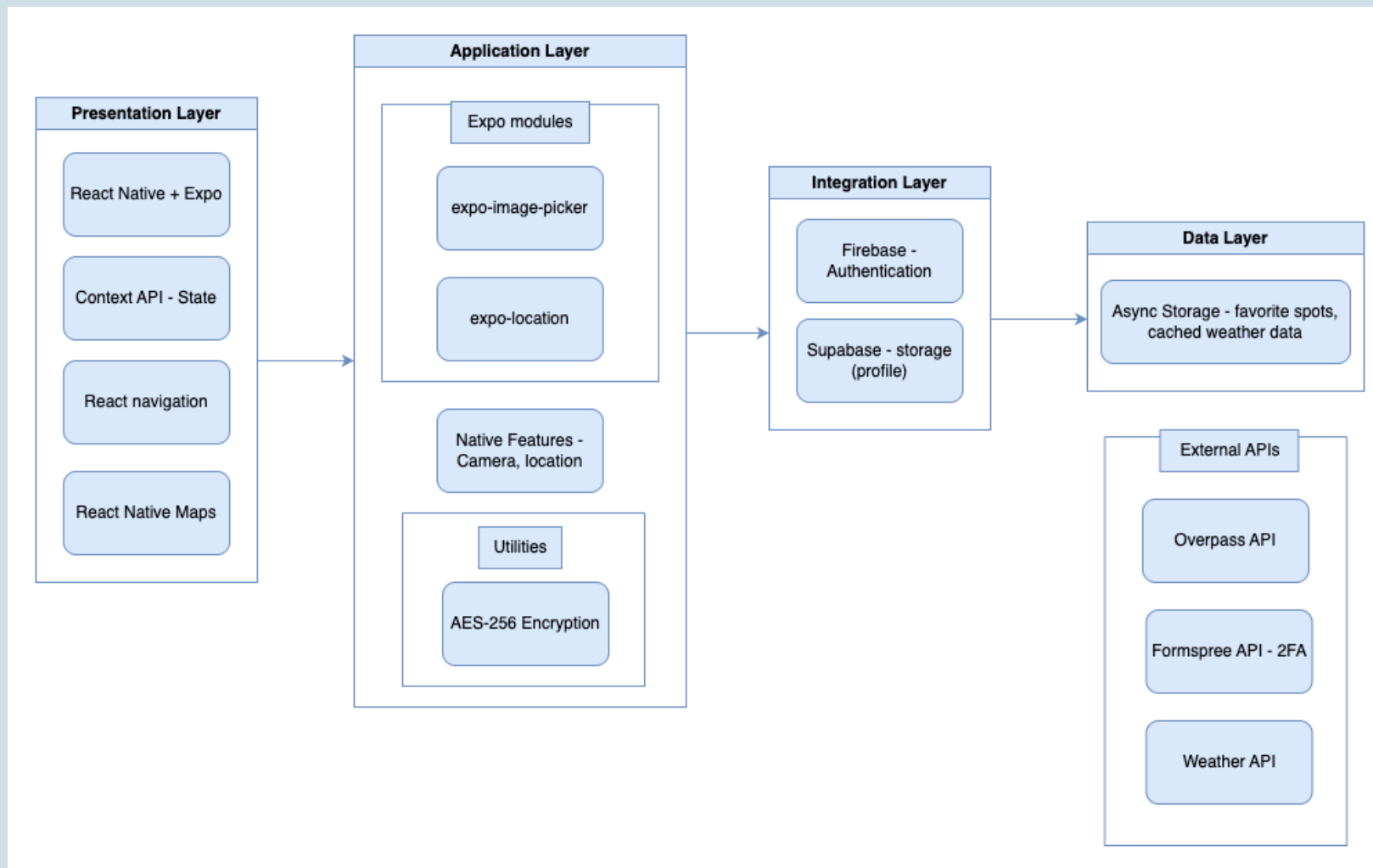
Introduction

Fishing Buddy is your personal fishing companion designed to enhance and simplify the fishing experience — whether you're a weekend hobbyist or a seasoned angler.

It helps you:

- Plan trips efficiently using the Trip Assistant
 - Discover nearby fishing spots and mark them favorite
 - Log and track your catches
 - Stay informed about weather conditions
-

Architecture diagram



Tech stack

Frontend

- **React Native** - Used for building a cross-platform mobile experience (iOS & Android)
- **TypeScript** - Ensures type safety and better developer tooling
- **Expo** – Simplifies development and deployment with access to native APIs (camera, location, notifications) and fast testing via Expo Go

Backend / Auth / Storage

- **Firebase Authentication** - Handles user sign up, login, password reset, and session management
- **Supabase** - PostgreSQL-based backend for structured user profiles

Encryption

- **AES 256** is used it to encrypt profile data before storing in supabase

State & Data Management

- **React Context API** - Centralized management for user profile
 - **AsyncStorage** - Used for caching favorite spots, checklist state (trip prep) and caching updates from OpenWeatherAPI
-

Tech Stack

Maps & Location (Packages)

- **react-native-maps**

Displays live maps with markers for fishing spots

- **expo-location**

Retrieves and monitors user's live GPS position

APIs & Integrations

- **OpenWeatherMap API**

Fetches real-time weather data for user and fishing locations

- **Email OTP using Formspree**

For two factor authentication

- **Overpass API**

To fetch all the nearby fishing spots

Feature Overview

1. Catch Logging
 2. Catch History
 3. Smart Fishing Spot Discovery and favourite spots
 4. Profile Setup, License Upload, Preferences and Experiences, Profile view
 5. Login and 2FA
 6. Reset Password
 7. Helpful Links
 8. Dashboard
 9. Trip Assistant
-

1. Log a Catch

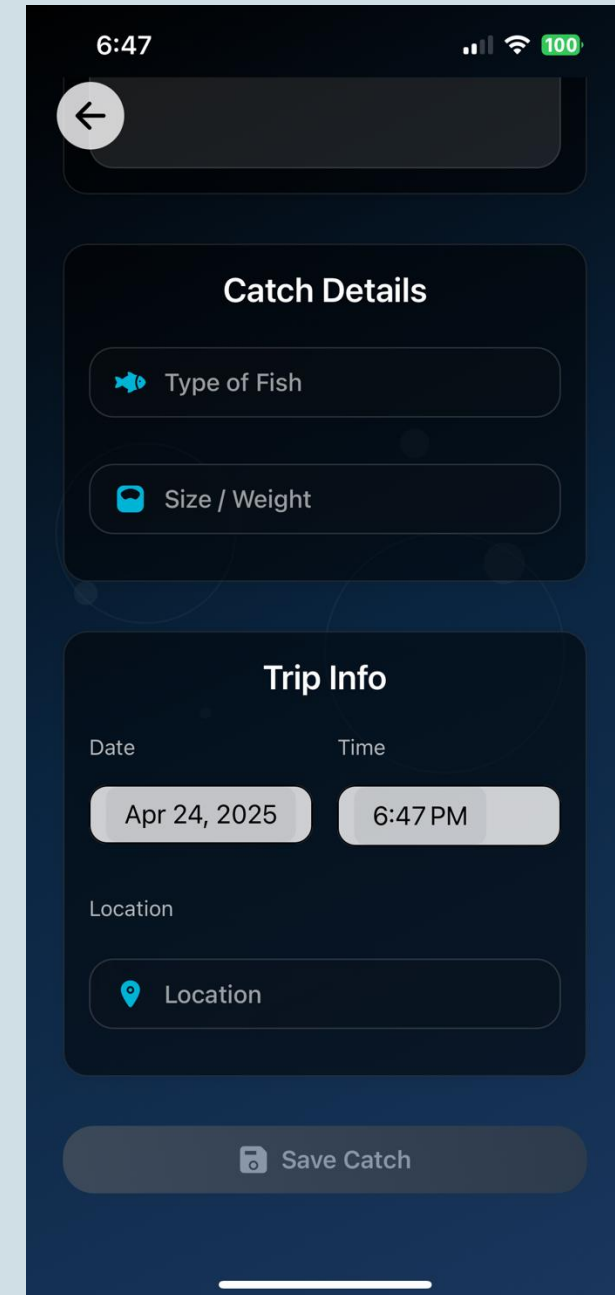
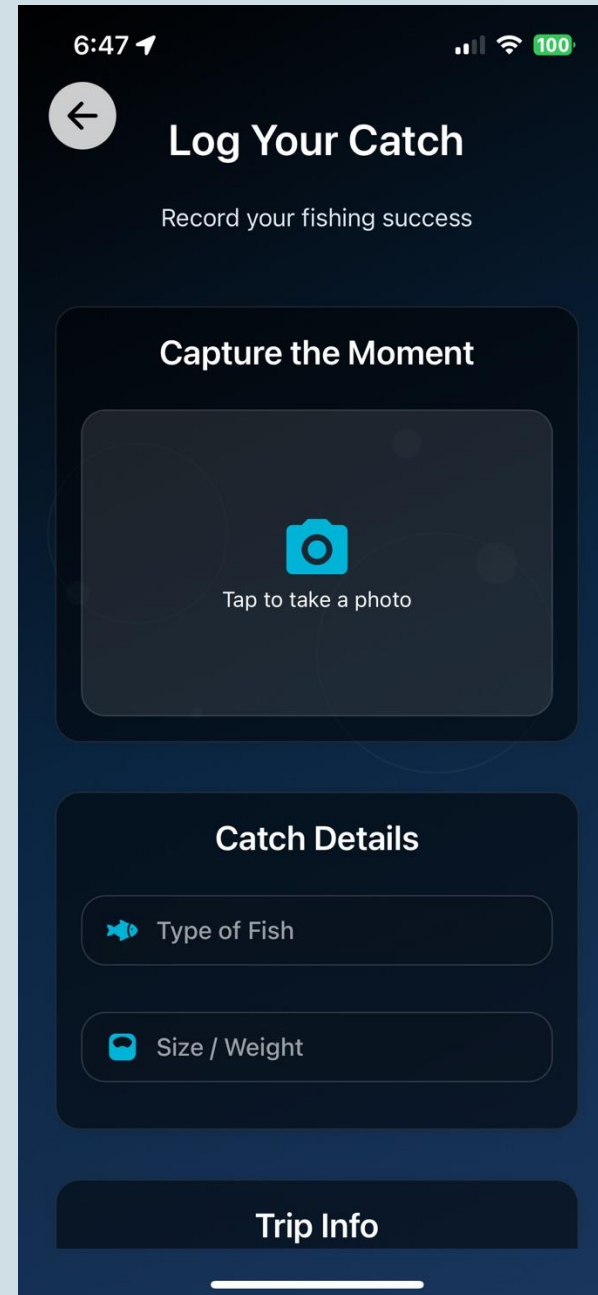
A feature that allows users to **document their fishing experience**, record catches, and preserve memories — while also helping track patterns and improve future success.

Users can either **take a photo** of their catch using the camera or **upload from their gallery**.

They can enter the type of fish, the size and weight.

They can enter the Trip information like date, time and location at which they caught the fish and then Save

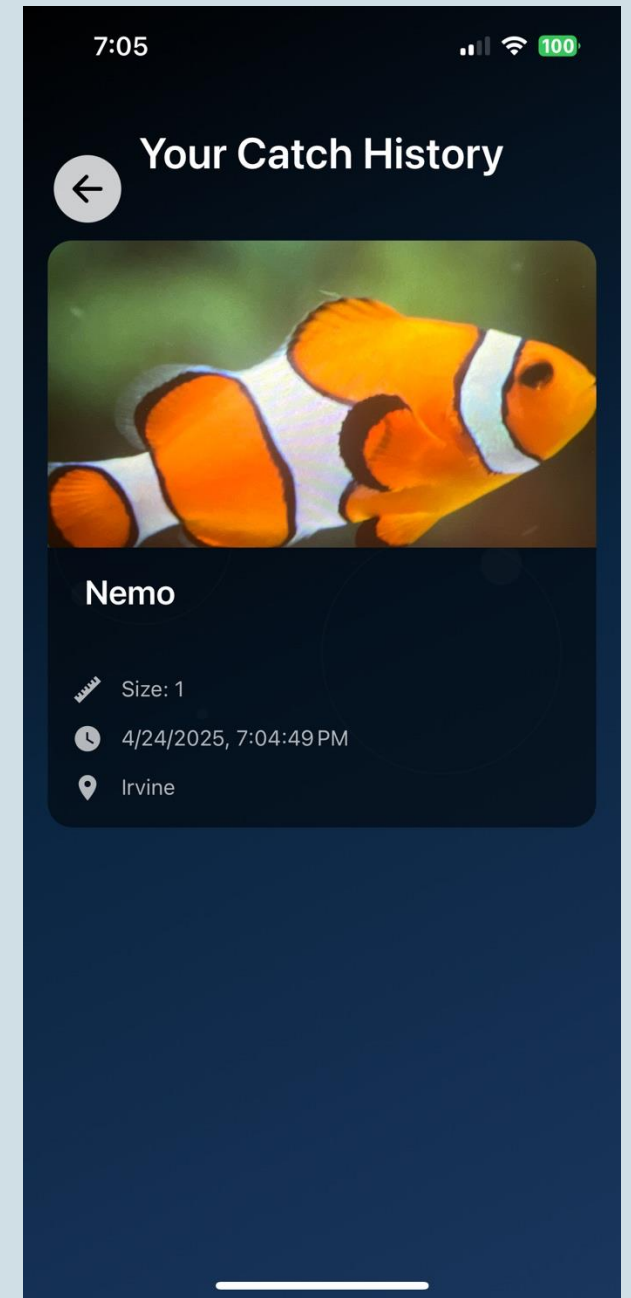
This screen is viewed after clicking on the “Log A Catch” from the Hamburger Menu



2. Catch History

The **Catch History** feature provides users with a visual and detailed archive of all their fishing adventures — turning every logged catch into a memory that can be revisited, compared, or shared.

It basically contains the information users entered in the Log a catch screen which they can view here.



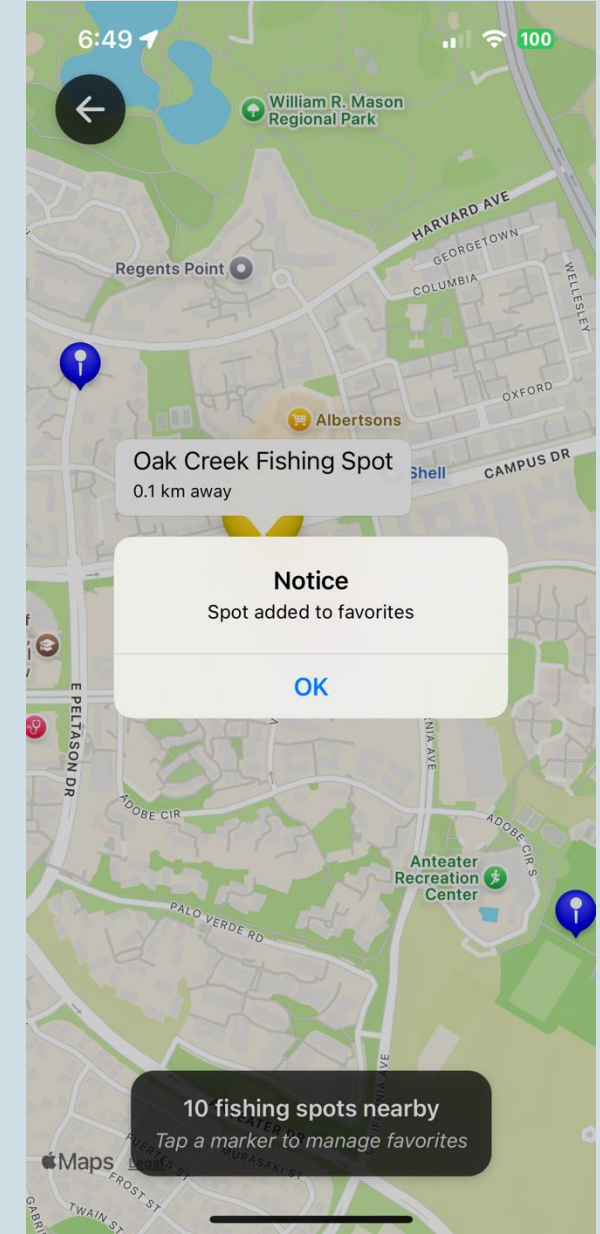
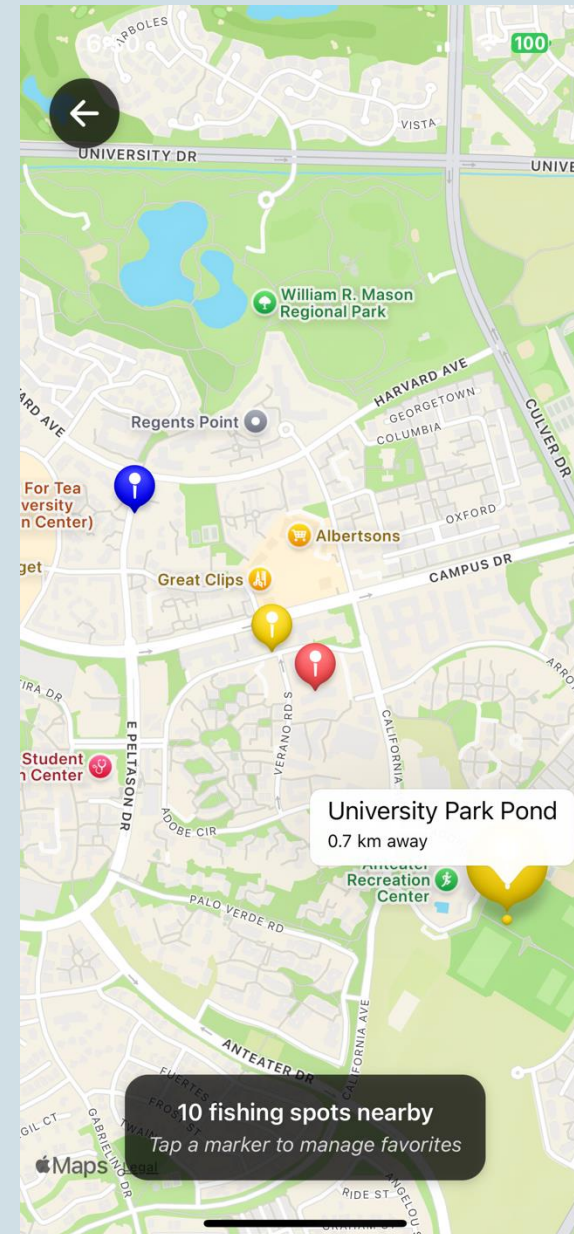
3. View Favorite Spots

The **View** Favourite Spots helps users visualize their surroundings, discover nearby fishing spots, and mark them as their own favourite spot

Displays user's **real-time location** using GPS and continuously updates as they move.

The user can click on the spot and mark them as Favourite.

- The blue ones are all the nearby spots.
- The yellow ones are the ones marked as favourite.
- The red one is the user's current location
- The user will be alerted once a spot is added to the favorites (Async storage)



4. Profile Setup

Profile Setup

Name, Email, Location (auto-fetched), Password, Confirm password should be typed by the user. (Mandatory fields)

Before this screen pops up, a permission prompt is rendered asking for the user's permission to get location, based on permission, we will decide to render location (only state and country)

The user can also upload a profile picture (optional). User will be asked to upload their fishing license and be prompted that it would be stored safely

We use AES-256 encryption to store all the data in the database (Supabase)

6:21 100%

←

Profile Picture Placeholder

Create Your Account

Get started on your fishing journey with us

Name

Email

Password

Confirm Password

CA, United States

→ Continue

6:22 100%

←

Upload Your Fishing License

Please upload a clear photo of your valid fishing license.*

Tap to select license photo

*The license is securely stored and kept private. You can access it anytime through the app's menu.

→ Skip

Profile Setup

User will be asked about their fishing preferences which are their experience level, fish types, gear, catch goals. Back button to go to the previous screen

User will be asked about their past experiences - like their biggest catch, locations they fished, total fishes caught.

Once completed: User is alerted that the profile is successfully created. Profile is stored securely (via Supabase with encryption)

User is directed to the **Dashboard**

6:23 100%

←

Your Fishing Preferences

Tell us about your fishing style and preferences

Experience Level

Beginner Intermediate Pro

Favorite Fish Species

Bass Trout Catfish Salmon

Preferred Fishing Type

Lake Ocean River Ice Fishing

Gear You Use

Rod & Reel Net Fly Rod Hand Line

Your Goal When Fishing

Recreation Food Trophy Sport

→ Next

6:23 100%

←

Your Fishing Experience

Share your fishing journey with us

Total Catches

e.g. 50

Biggest Catch

e.g. 15lb Trout

Locations You've Fished

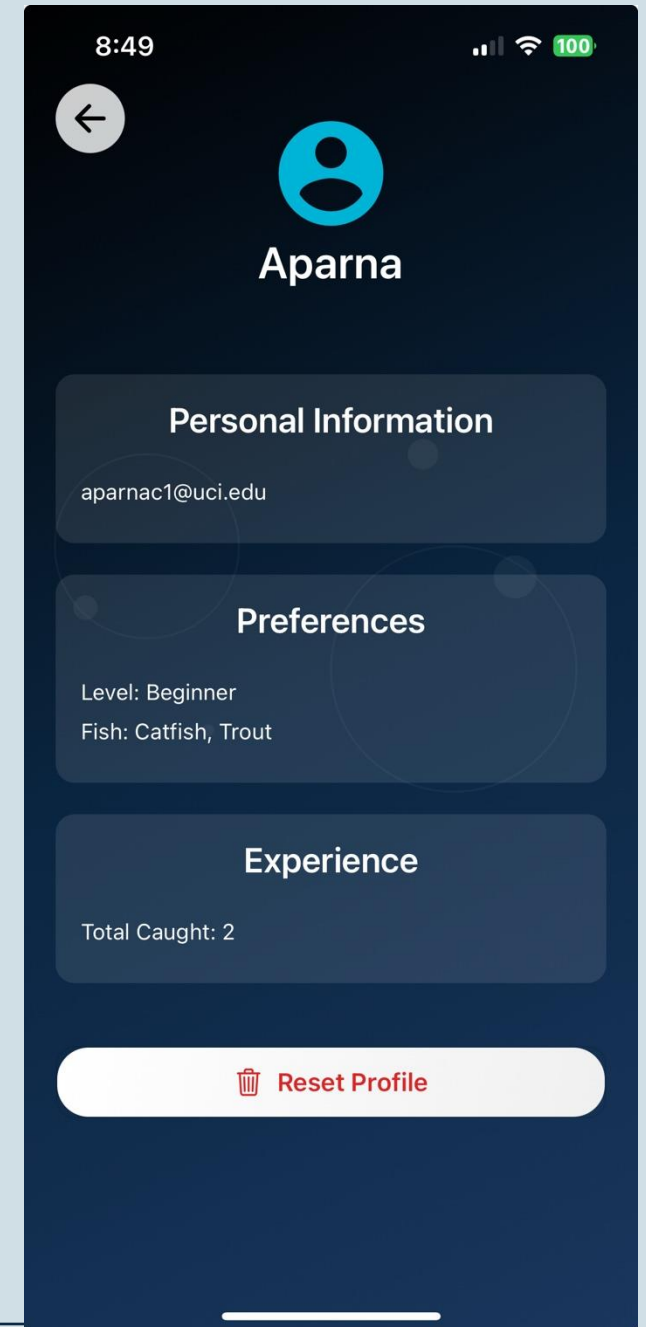
e.g. Lake Tahoe, Silver River, etc.

✓ Finish

4. Profile View

The **Profile** section allows users to set up their identity, preferences, and fishing history, giving the app a tailored, meaningful experience.

It has a Reset Profile Button that would clear the profile, the storage set, the data stored in the Database as well.



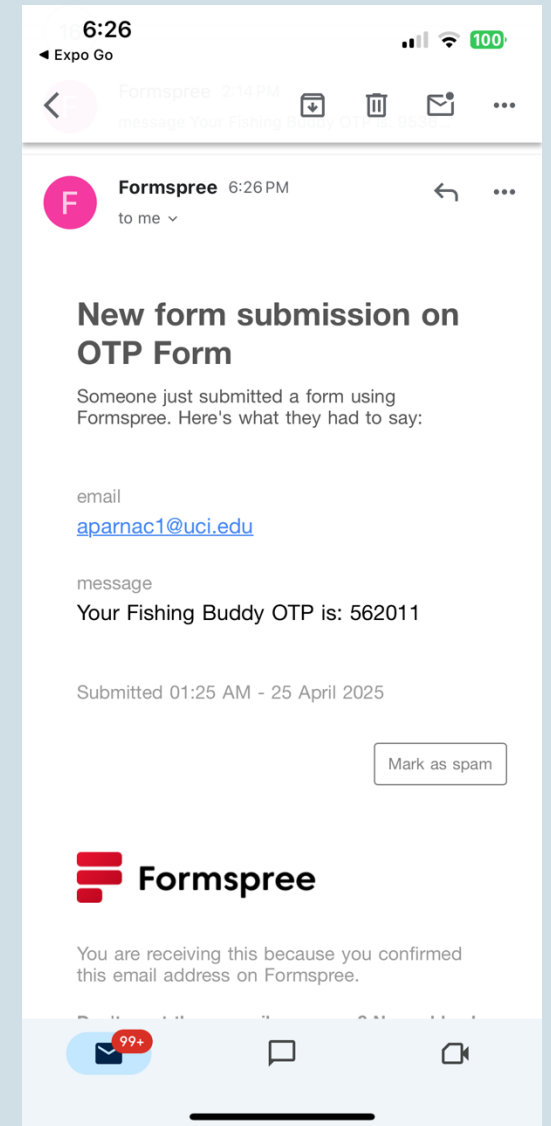
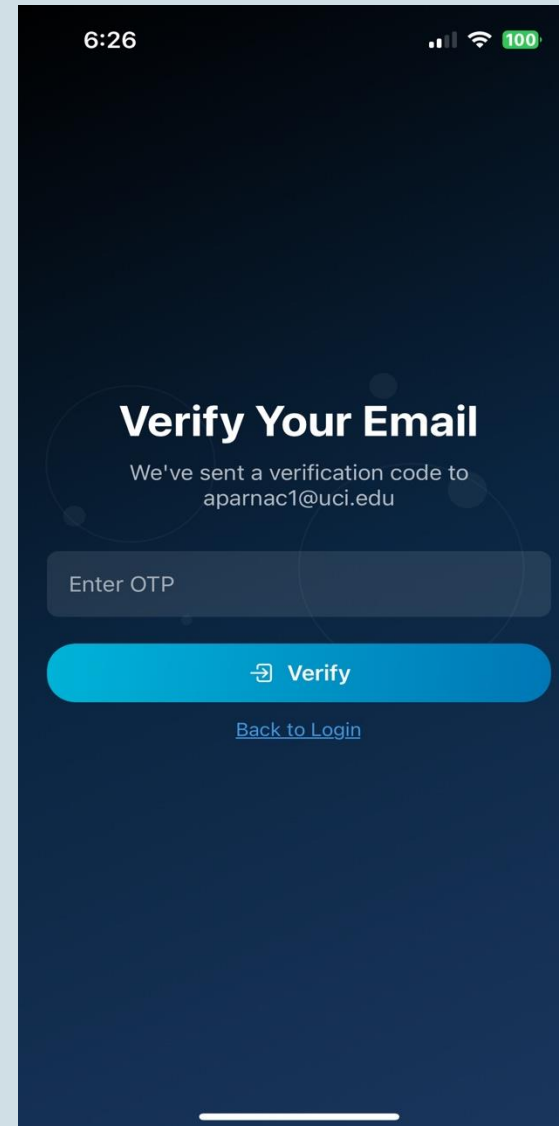
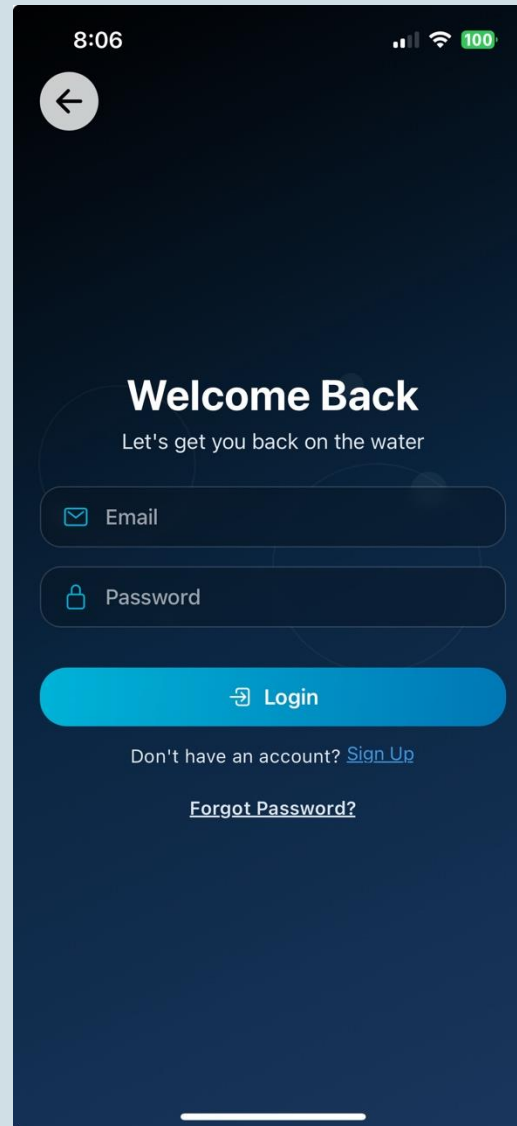
Login flow

After user clicks on Sign in the Welcome screen

Step 1: User goes to the login screen, type their credentials

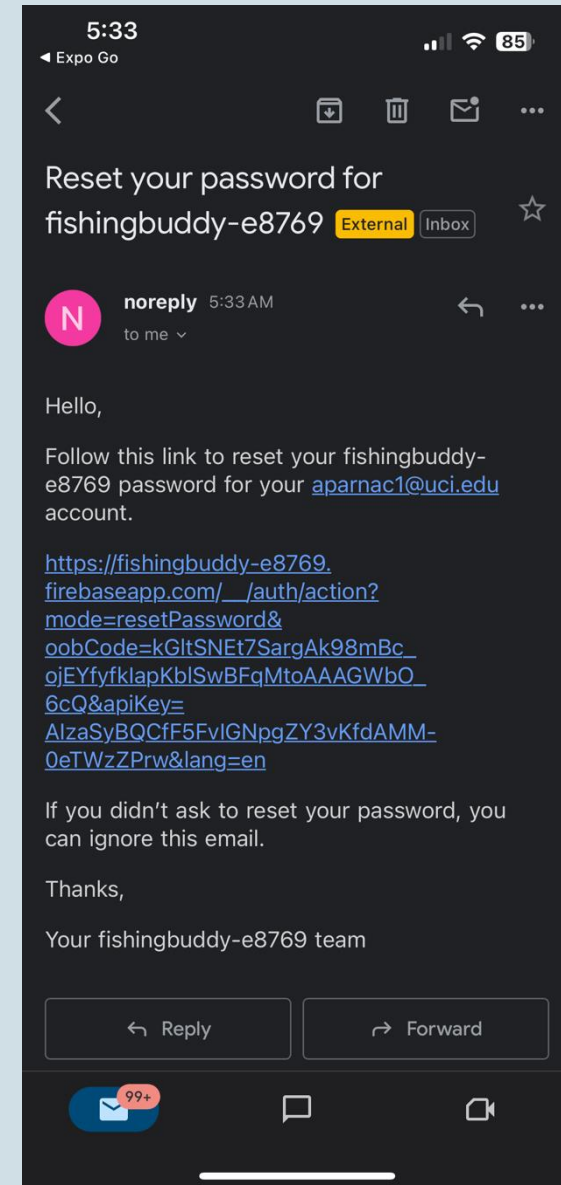
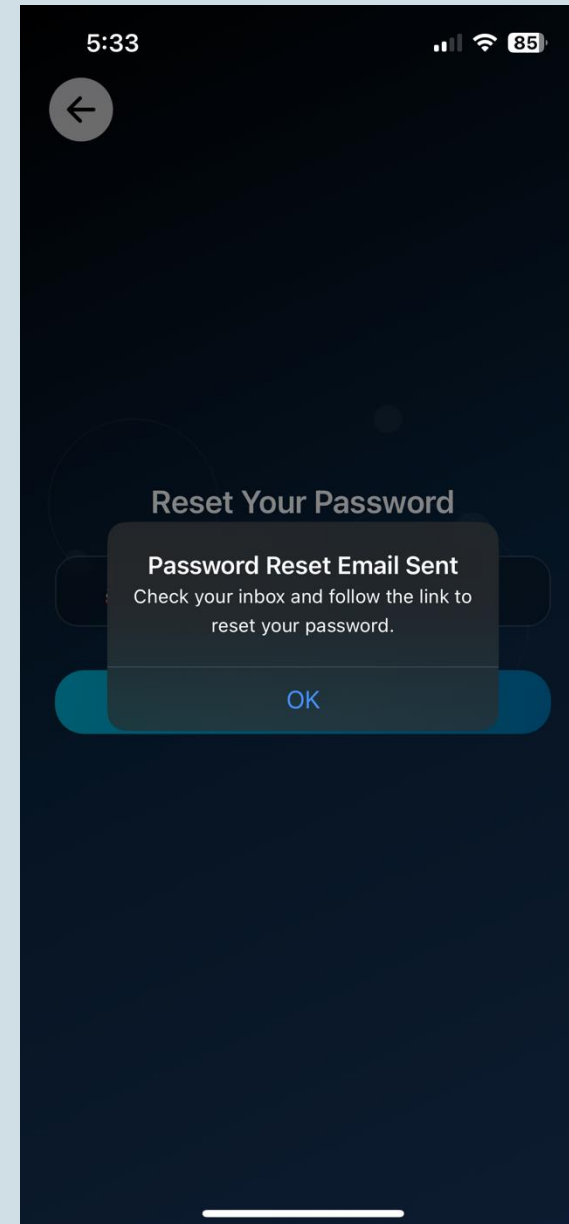
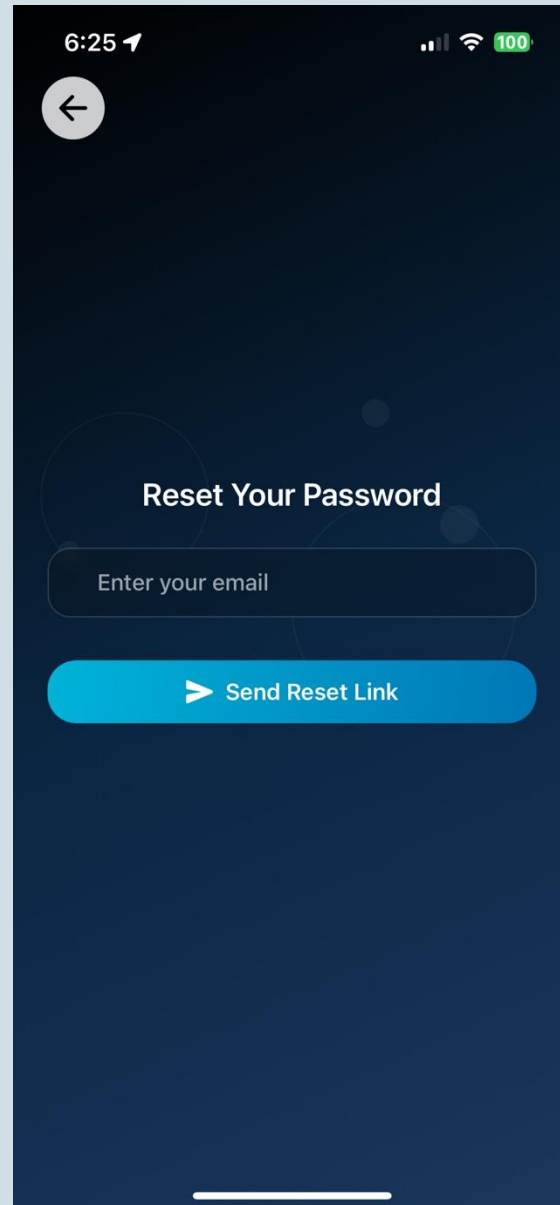
Step 2: They navigate to Verify email screen where they type their OTP and verify. Once done, user goes to Dashboard

Forgot password: If the user clicks on forgot password, he is navigated to reset password screen, which sends as email to the user's email. (Firebase)



Reset password

Forgot password: If the user clicks on forgot password, he is navigated to reset password screen, which sends as email to the user's email. (Firebase)

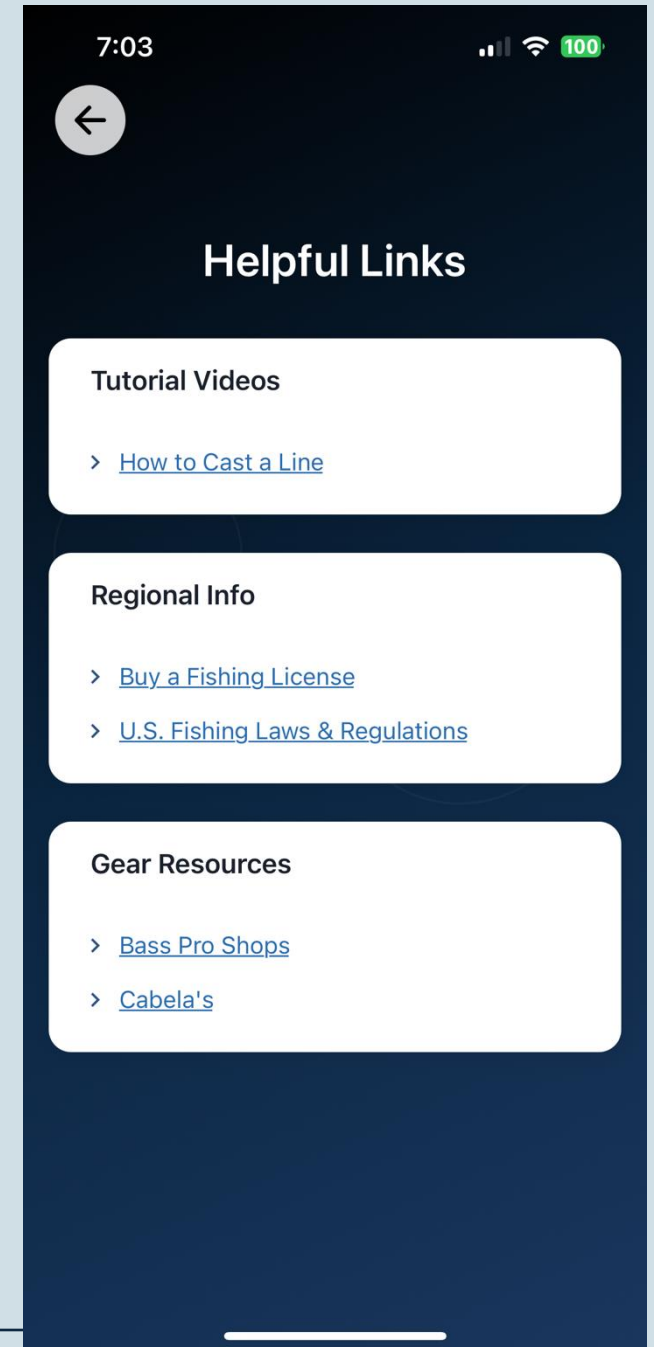


5. Helpful Links

To provide users with easy access to **fishing education, safety regulations, and gear/license purchasing options**, so they're always prepared and informed.

The Helpful Links screen displays a **list of categorized resources** such as

1. How to cast a fishing line
2. U.S Fishing Laws and Regulations
3. Links to official sites to **purchase or renew fishing licenses**
4. Links to top-rated online stores
5. Beginner gear bundles or recommended kits

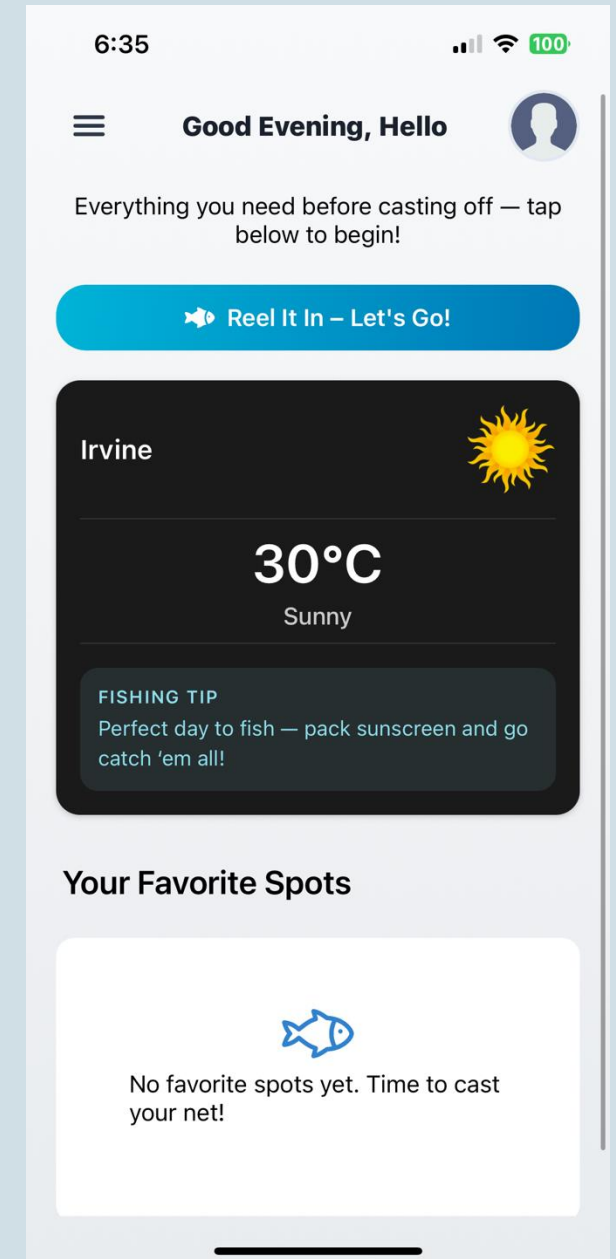


Dashboard

The **Dashboard** acts as the central hub of the app — a clean, informative, and action-oriented screen.

To provide users with:

- The weather in their own location along with a Fishing tip
 - Shows all the favorite spots if the user has marked any (Favourite spots can be marked from the Hamburger menu item)
 - One-tap access to essential tools via a hamburger menu. The essential tools include Logging a Fish catch, Viewing Favourite and nearby spots.
-
- The user can navigate to their profile on tapping the Profile Image/Icon
 - The “Let’s go” button – The core feature of the app – which is the Trip Assistant – The core feature of FishingBuddy



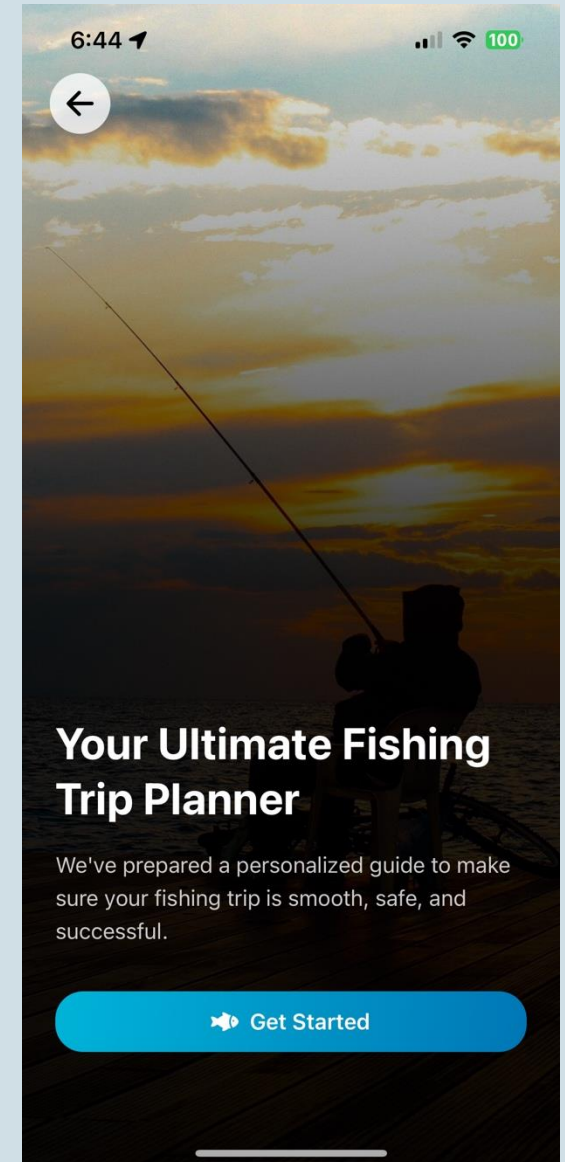
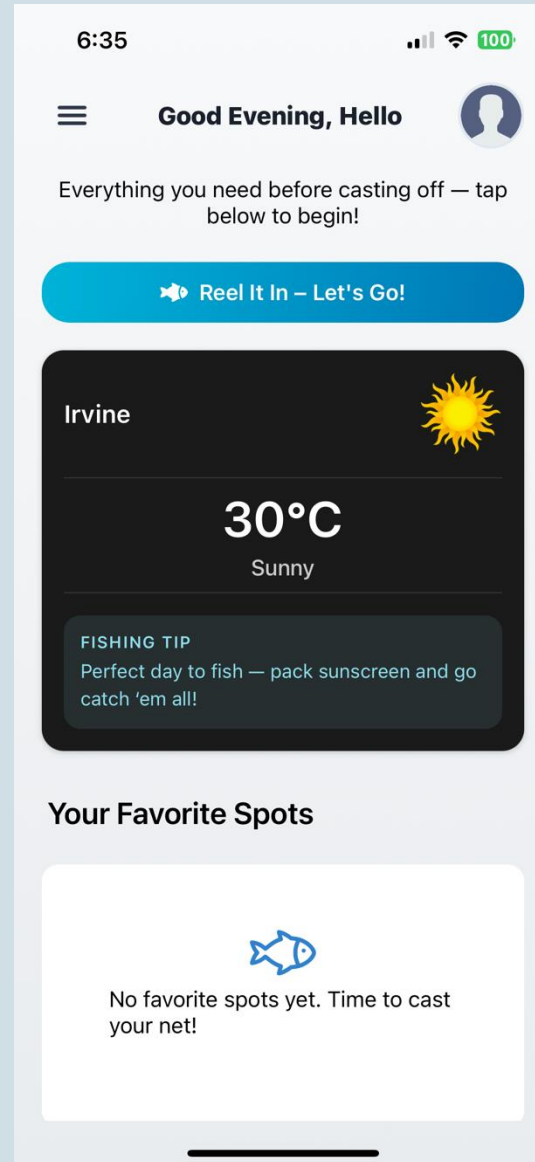
Trip Assistant

A step-by-step guided flow that helps users **prepare, plan, and begin** their fishing adventure — designed like a checklist-based mini-game to enhance engagement.

The **Trip Assistant** is the heart of the Fishing Buddy experience — a smart, guided feature that helps users **prepare, plan, and manage their fishing trip** from start to finish.

1. Checklist
 2. Choose location to fish
 3. Weather at that particular location
 4. License Reminder
- And more...

Clicking the “Reel it in – Let’s Go!” button starts the Trip Assistant

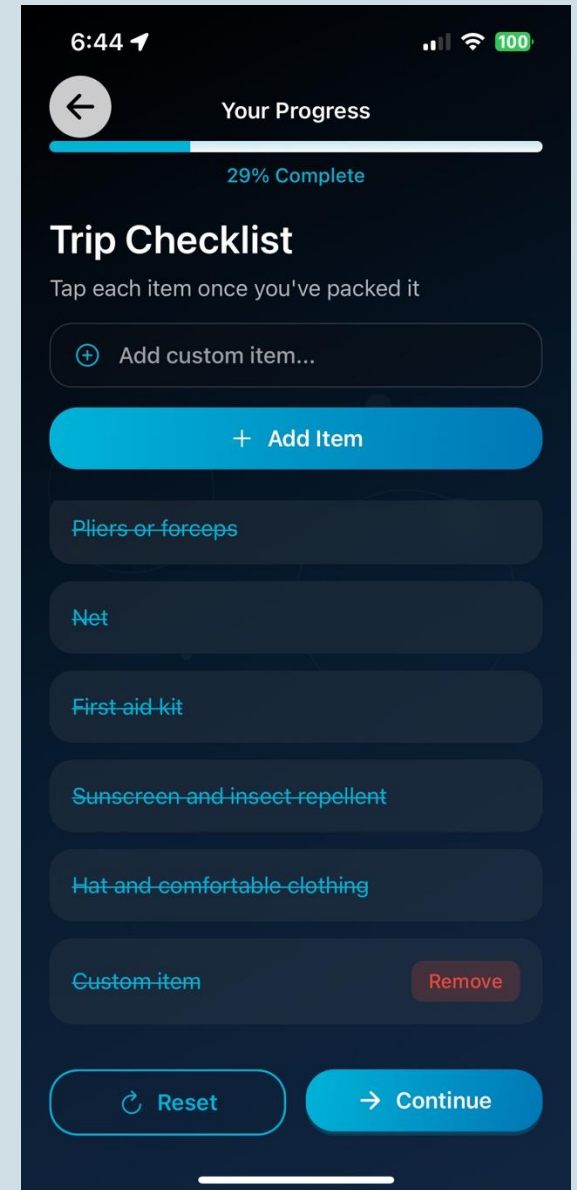


1. Checklist

The **Checklist** is the first step in the **Trip Assistant** flow — it ensures users are properly equipped for a safe and successful fishing trip.

- The checklist is filled with default items.
- The user can also add custom check list items for their convenience.
- The users also have the option to remove the custom added item
- The user can also reset the custom added items to the default items

On the top of the screen, there is a progress bar which shows how much progress the user has made in the Trip Assistant flow



2. Location Selection

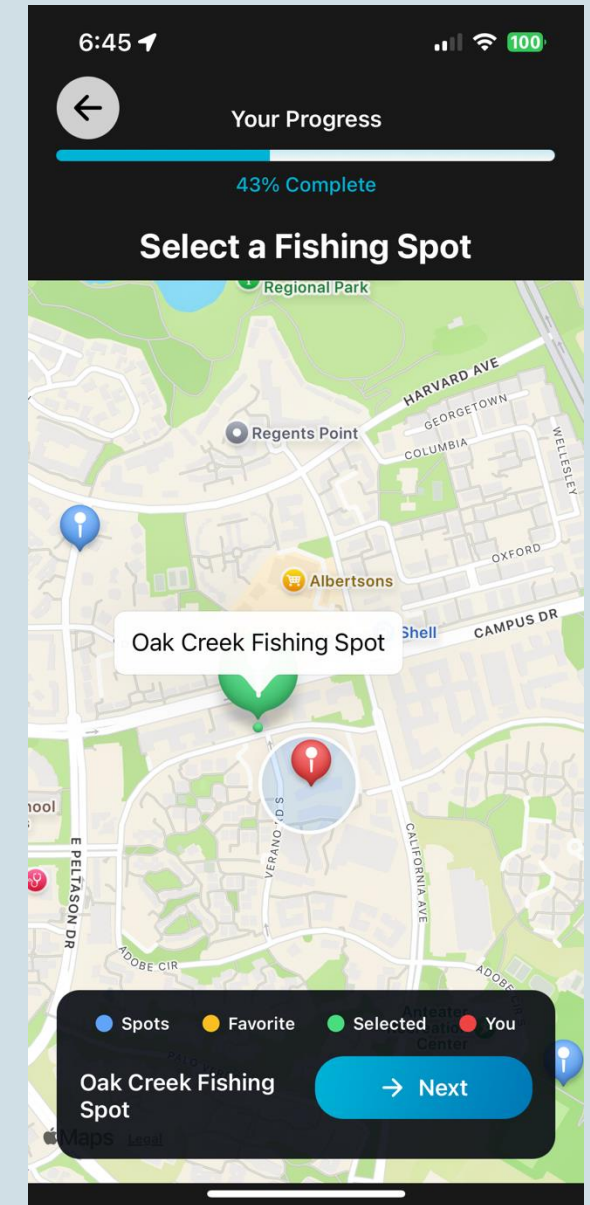
Once the checklist is complete, users are guided to choose their preferred fishing location. This step makes use of a highly interactive and informative **map screen**, allowing users to visually explore their surroundings and make smart choices based on personal preferences and current conditions.

Live GPS Tracking: The map automatically centers on the user's current location, provided they've granted location access.

Nearby Fishing Spots: All fishing spots within a certain radius (20km) are shown on the map

A key is shown to avoid confusion for the user

So the user has to select a spot and click on the next button



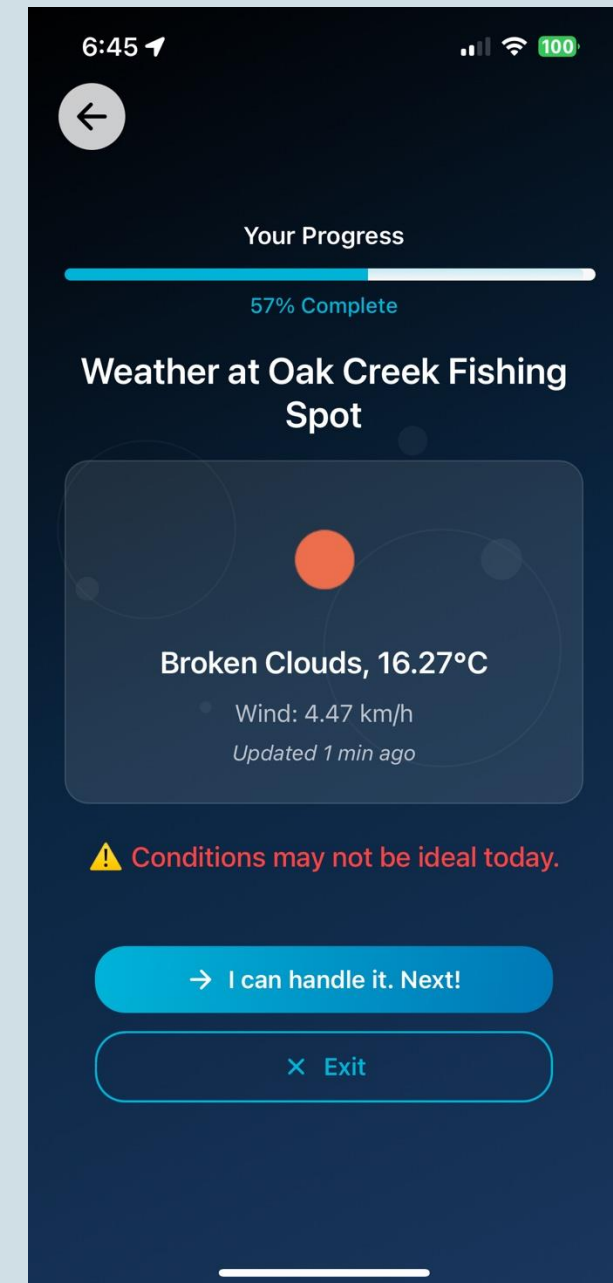
3. Weather at your spot

After selecting a fishing spot, the user is taken to the **Weather screen**, where they receive **real-time, location-specific weather insights** for their chosen spot.

What It Shows

Current Weather Conditions:

- Temperature (°C)
- Weather summary (e.g., Sunny, Cloudy, Rainy)
- Wind speed
- Weather last updated time to show how recent the data is.
- A line in the end that says if it's ideal day to go fishing or not
- The user is given an option to Exit out of the Trip Assistant flow. If he clicks on Exit, he is navigated to the Dashboard

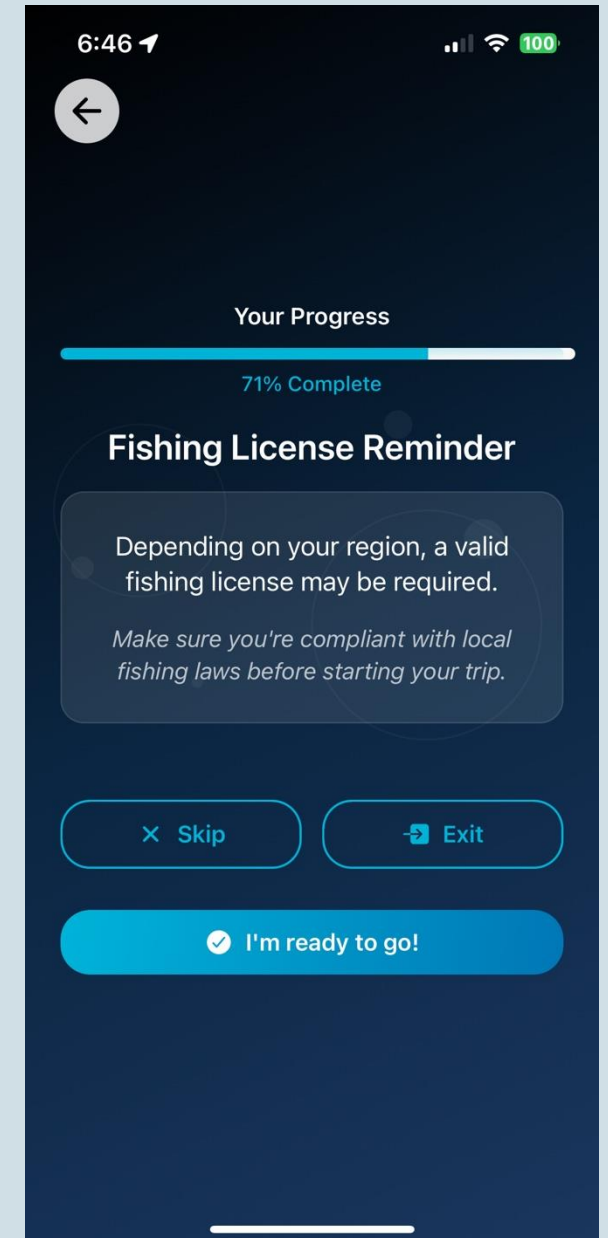


4. License Reminder

This screen ensures users have met all **legal requirements** before they head out on their trip.

Why This Screen Matters

- Ensures the user is **legally compliant**
- Acts as a **friendly reminder**, especially for beginners



5. Set end time

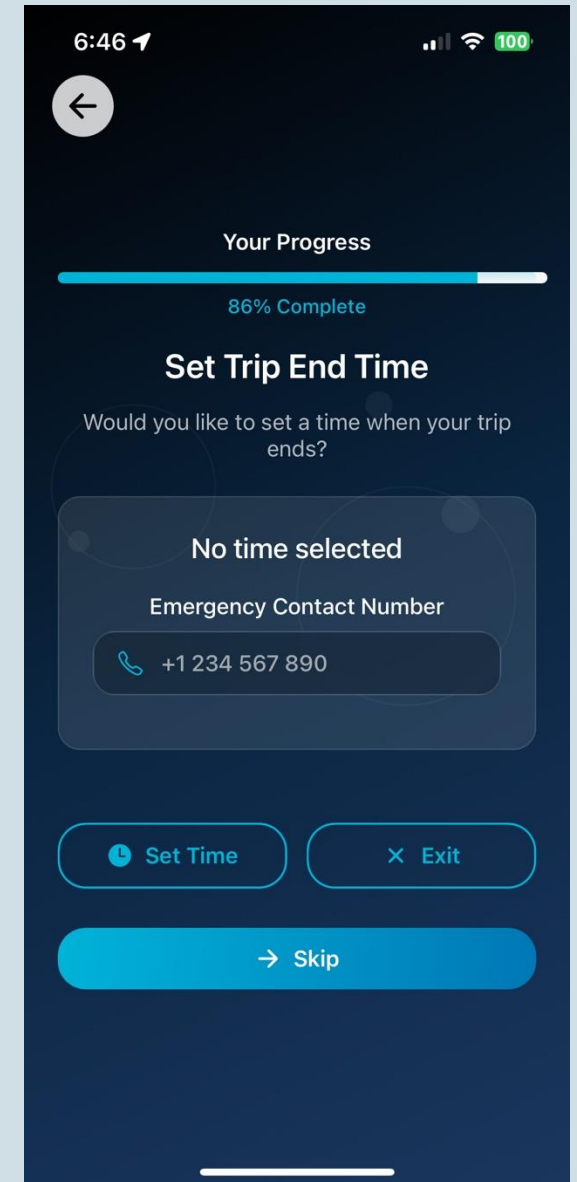
This screen helps enhance **safety** and **accountability** by letting users optionally share when they expect to finish their trip.

User picks a time using a clean, scrollable time picker.

If user hasn't already, they're asked to add an emergency contact. This is optional

Once the end time hits:

- The app can trigger an alert to send a notification to the emergency contact
- The user has the option of Skipping and exiting from the screen



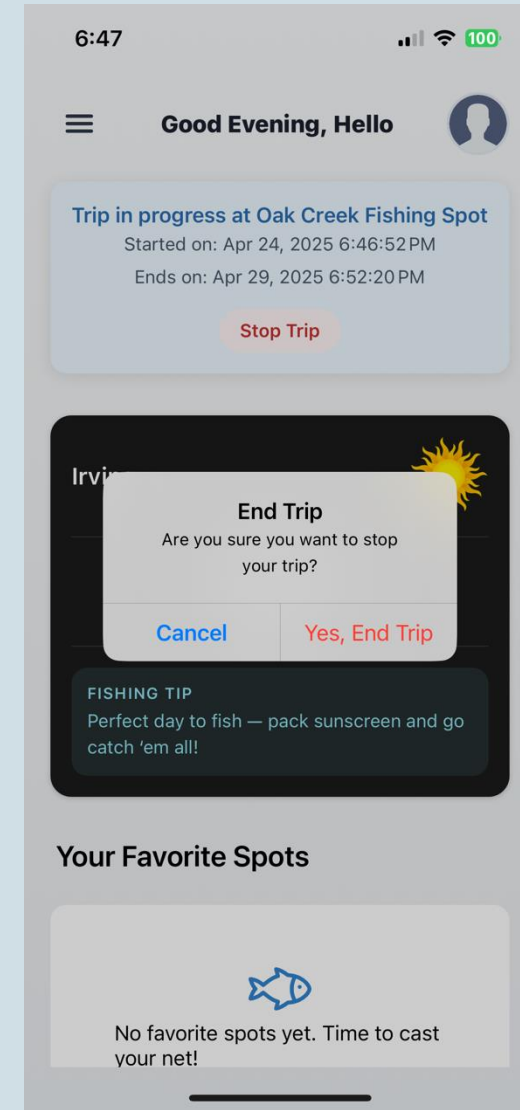
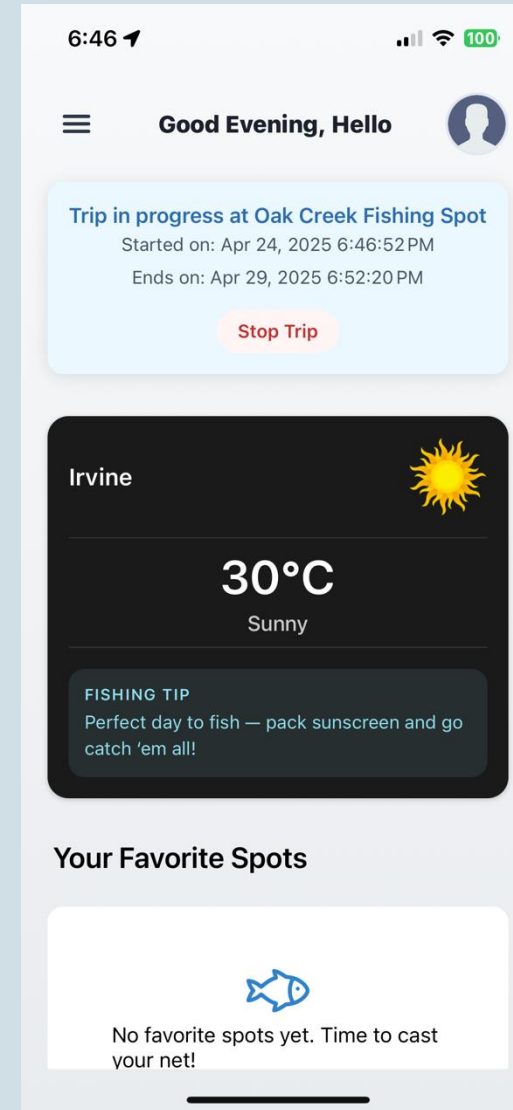
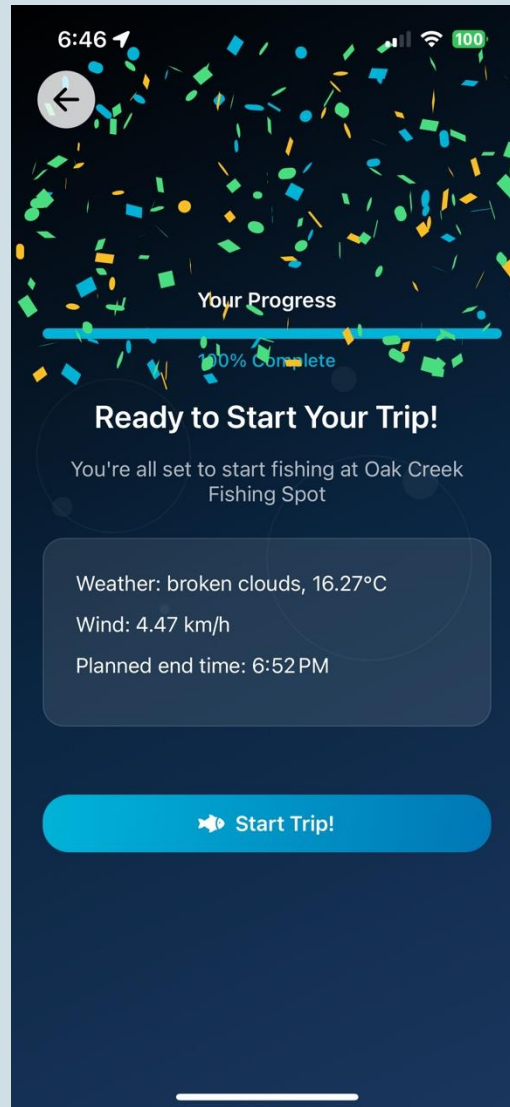
6. Start Trip

This screen gives the details of the location the user is going to, the weather, the wind speed, the planned end time of the user.

The confetti is for completion of the trip assistant 😊

After this screen the user is navigated back to the dashboard where they have the option of ending the trip which they started

Clicking on Stop trip removes the banner and restores the original dashboard view



Security Privacy and Identity

Security, Privacy & Identity

- **Firestore Authentication** is used for secure user login and account management.

- Supports email/password sign-up and login.
- Passwords are securely hashed and never stored directly.
- Also check if the email is valid and if the password is a strong password (contains uppercase, lowercase and special characters)

- **Two-Factor Authentication (TFA)**

- Explored email-based OTP via Formspree as a lightweight mechanism for additional verification.

- **User Profile & Sensitive Data:**

- Stored securely in **Supabase**, with the Firebase UID used as the primary identifier (id column).
 - Includes personal details, trip preferences, and experiences. The app supports storing encrypted strings of data using AES encryption before saving.
 - This adds a layer of security
-

Security Privacy and Identity – part 2

- **Local Device Permissions**

- Location, media library (for image upload), and camera access are all opt-in.
- Users are prompted only when required, with graceful fallbacks and clear UI indicators.

- **Minimal Data Collection**

- The app collects only what's necessary: name, email, preferences, optional emergency contact, and trip-related details.

- **User Control & Transparency**

- The app provides clear options to reset profile
-

Strong password and email

As mentioned earlier, the creation of profile would require a valid email and a strong password i.e a password that has uppercase, lowercase, numbers and special characters.

Password. Checking (more than 6 characters) and matching is done in real time

6:21 100%

←

Create Your Account

Get started on your fishing journey with us

Aparna

hello@gmail.

Password must be at least 6 characters

Confirm Password

CA, United States

→ Continue

6:21 100%

←

Create Your Account

Get started on your fishing journey with us

Aparna

hello@gmail.

Passwords do not match

CA, United States

→ Continue

6:21 100%

←

Create Your Account

Get started on your fishing journey with us

Aparna

hello@gmail.

Invalid email format

Password must contain at least one uppercase letter

Password must contain at least one number

Password must contain at least one special character (!@#\$%^&*(),.?":{}|<>)

CA, United States

→ Continue

/Future Enhancements

1. **AI Fishing Coach Chatbot**

A built-in chatbot that acts like a virtual fishing guide:

- Gives tips tailored to the user's fishing level (beginner, intermediate, expert).
- Recommends best spots based on current weather and catch history.
- Built using a lightweight **LLM**

2. **Gamification & Fishing Competitions**

Add gamified layers to drive recurring engagement:

- **Daily/Weekly Leaderboards:** Most catches, largest catch, rarest species.
- Display badges for milestones like first catch

3. **Community & Groups**

- Allow users to join local fishing clubs or start their own.
 - Group challenges and collaborative goals
 - In-app chat for clubs with shared catch history and trip planning.
-



Thank you
