ABSTRACT

Animal pests such as otters are still a serious problem in the fisheries sector, especially in the Mina Jaya Fish Farming Group (Pokdakan). To overcome this, an Internet of Things (IoT)-based pest repellent system was developed using an ESP32 microcontroller, gyroscope sensor, and ultrasonic speaker. This system detects changes in the slope of the air surface as an indicator of disturbance, then activates ultrasonic waves in the frequency range of 20–40 kHz. The trial was conducted with otters as test animals, considering their hearing sensitivity to ultrasonic frequencies. The test results showed that frequencies above 24 kHz caused a significant response, with the highest reaction at 29 kHz. This system is also integrated with real-time notifications via Telegram, with an average response time of 4.75 seconds. The waves produced are stable at an average frequency of 24.74 kHz in the form of square waves, and the device can operate for up to 12 hours with a success rate of 95%. In addition, testing showed that the ultrasonic waves used did not have a negative impact on fish in the pond.

Keywords*: Internet of Things (IoT), ESP32, Gyroscope, Ultrasonic, Otter, Telegram Notification.*