Deteksi Environmental DNA Kura-kura Brazil (Trachemys scripta elegans, Wied-Neuwied 1839) dengan Analisis qPCR menggunakan Marka 12S rRNA pada Enam Danau Universitas Indonesia, Depok, Jawa Barat = Environmental DNA Detection of Kura-kura Brazil (Trachemys scripta elegans, Wied-Neuwied 1839) with qPCR Analysis using 12S rRNA Markers in Six Lakes Universitas Indonesia, Depok, West Java

Isni Rahmadhani Umar, author

Abstrak

Kura-kura brazil (Trachemys scripta elegans) merupakan salah satu spesies invasif yang berasal dari Amerika Selatan dan telah berkembang di berbagai negara akibat dari pelepasan hewan peliharaan serta dapat berdampak buruk bagi spesies asli. Penelitian dilakukan untuk mendeteksi keberadaan spesies Trachemys scripta elegans pada enam danau pada wilayah Universitas Indonesia, Depok, Jawa Barat. Pendeteksian spesies tersebut dilakukan dengan metode environmental DNA (eDNA) dan quantitative PCR (qPCR) dengan gen target 12S rRNA. Materi genetik telah diisolasi menggunakan metode PCI dan gen target 12S rRNA dikuantifikasi menggunakan qPCR. Keberadaan gen target pada sampel ditentukan melalui nilai LoD dan LoQ yang didapatkan dari kurva standar. Sampel yang memiliki salinan DNA di bawah nilai LoD dapat dinyatakan positif. Materi genetik kura-kura brazil terdeteksi pada seluruh sampel danau di Universitas Indonesia. Faktor lingkungan tidak berpengaruh dalam pendeteksian kura-kura brazil. Berdasarkan hasil yang diperoleh, eDNA berpotensi kuat dalam pemantauan spesies invasif baru dan dapat digunakan untuk pengendalian lebih lanjut.

.....The Red-eared Slider (Trachemys scripta elegans) is an invasive species from South America and has developed in various countries due to the release of unwanted pets which can have negative impacts on native species. This research was conducted to detect the presence of the species Trachemys scripta elegans in six lakes at Universitas Indonesia, Depok, West Java. The species detection was carried out using environmental DNA (eDNA) and quantitative PCR (qPCR) method with 12S rRNA target gene. The genetic material was isolated using the PCI method and 12S rRNA target gene were quantified using qPCR method. The presence of the target gene in the sample was determined by the LoD and LoQ values obtained from the standard curve. Samples that have DNA copies under the LoD value can be tested positive.Genetic material of the Red-eared Slider was detected in the all lake samples of University of Indonesia. Environmental factors have no effect on the detection of the Red-eared Slider. Based on the results, eDNA has strong potential in monitoring the new invasive species and can be used for further control.