ABSTRACT

River terrapins are turtle types that live in freshwater or brackish water. There are 12 species of river terrapin worldwide. A total of 26 COI sequences of worldwide river terrapins were used in this study. The study aims to determine the global utility of river terrapin DNA barcoding using novel COI sequences and GenBank. Nevertheless, the conservation status of the river terrapins is also taken into account for sustainability priority. The sequences contained three families, as determined by the UPGMA tree, with 33% of river terrapins classified as least concern (LC) and 25% classified as critically endangered (CR). The genomic and bioinformatics analyses of river terrapins reported here may serve as a foundation for future research on this species throughout the world.

OBJECTIVE

To define the global utility of river terrapin DNA barcoding via novel COI sequences and compare them to other COI sequences earlier available in BOLD systems and GenBank.

MATERIALS AND METHODS

There were four B. affinis individuals in this study who came from two different population regions that crossed the east and west coasts of the Malaysia Peninsula (Figure 1).

Venipuncture techniques were used to draw blood from the species through the subcarapacial venous plexus (SVP) and another through the internal jugular vein.

The research and field permit approval number is B-00335-16-20, issued by the Department of Wildlife and Parks, peninsula Malaysia.

We use the COIipt Tuntong set primers 5'-GGCGGATTAACGGCACAACAGCAG'-3' (forward) and 5'-TGGTGACAGGATGGGCCTGC'-3' (reverse) (Guntoro and Riyanto, 2020).

17 sequences were downloaded from GenBank, and five were mined from BOLD Systems, yielding 26 sequences for this work.

MEGAX (Kumar et al., 2018) was used to align the sequences that were made and those that were found.

Phylogenetic analysis was done using MEGAX with 1000 bootstrap replicates and the Unweighted Pair Group Method with Arithmetic Mean (UPGMA) as the best method (Sneath and Sokal 1973).

Excel 2016 was used to make the pie charts that show all river terrapins' conservation statuses.

RESULTS AND DISCUSSION

Figure 2. UPGMA tree constructed with MEGAX based on COI sequences belonging to order Testudines.

Figure 3. The conservation status of the river terrapins is based on the IUCN Red List.

CONCLUSION

In conclusion, the COI marker continues to be an effective barcode marker for river terrapin species, providing vital evidence that may be utilised to distinguish and recognise genera and species of these Testudines organisms. The genomic and bioinformatics analyses of river terrapins reported here may serve as a foundation for future research on this species throughout the world, allowing for more practical conservation work for this threatened species.

REFERENCES

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