

# DNA barcodes for globally threatened marine turtles: A registry approach to documenting biodiversity

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**Abstract:** DNA barcoding is a global initiative that provides a standardized and efficient tool to catalogue and inventory biodiversity, with significant conservation applications. Despite progress across taxonomic realms, globally threatened marine turtles remain underrepresented in this effort. To obtain DNA barcodes of marine turtles, we sequenced a segment of the cytochrome c oxidase subunit I (COI) gene from all seven species in the Atlantic and Pacific Ocean basins (815 bp; n = 80). To further investigate intraspecific variation, we sequenced green turtles (*Chelonia mydas*) from nine additional Atlantic/Mediterranean nesting areas (n = 164) and from the Eastern Pacific (n = 5). We established character-based DNA barcodes for each species using unique combinations of character states at 76 nucleotide positions. We found that no haplotypes were shared among species and the mean of interspecific variation ranged from 1.68% to 13.0%, and the mean of intraspecific variability was relatively low (0-0.90%). The Eastern Pacific green turtle sequence was identical to an Australian haplotype, suggesting that this marker is not appropriate for identifying these phenotypically distinguishable populations. Analysis of COI revealed a north-south gradient in green turtles of Western Atlantic/Mediterranean nesting areas, supporting a hypothesis of recent dispersal from near equatorial glacial refugia. DNA barcoding of marine turtles is a powerful tool for species identification and wildlife forensics, which also provides complementary data for conservation genetic research. © 2009 Blackwell Publishing Ltd.

**Author Keywords:** *Chelonia mydas*; COI; DNA barcoding; MtDNA; Sea turtle; Species identification

**Index Keywords:** *Chelonia mydas*; Cheloniidae; Testudines

Year: 2010

Source title: Molecular Ecology Resources

Volume: 10

Issue: 2

Page : 252-263

Link: [Scopus Link](#)

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ISSN: 1755098X

DOI: 10.1111/j.1755-0998.2009.02747.x

Language of Original Document: English

Abbreviated Source Title: Molecular Ecology Resources

Document Type: Article

Source: Scopus

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