University of Groningen

Molecular ecology and evolution of the porpoises

Ben Chehida, Yacine

DOI:
[10.33612/diss.181589330](https://doi.org/10.33612/diss.181589330)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2021

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):
Ben Chehida, Y. (2021). *Molecular ecology and evolution of the porpoises*. [Thesis fully internal (DIV), University of Groningen]. University of Groningen. <https://doi.org/10.33612/diss.181589330>

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

Molecular ecology and evolution of the porpoises

Yacine Ben Chehida

© Copyright 2021 by Yacine Ben Chehida

The work reported in this thesis was conducted at the GREEN Research Unit (Genomics Research in Ecology & Evolution in Nature), which is part of the Groningen Institute for Evolutionary Life Sciences (GELIFES) of the University of Groningen (RUG, The Netherlands), according to the requirements of the Graduate School of Science (Faculty of Science and Engineering, University of Groningen). This PhD was financially supported by the University of Groningen through the Starting Package awarded to Dr. Michael C. Fontaine. Additional financial support for the printing of this thesis was received from the University Library and the Graduate School of Science and Engineering of the University of Groningen.

This thesis should be cited as:

Yacine Ben Chehida., 2021. Molecular ecology and evolution of the porpoises. PhD Thesis, University of Groningen, Groningen, The Netherlands.

Cover	Gurval Légo & Yacine Ben Chehida Tree from Charles Darwin's tree-of-Life sketch from notebook B, 1837
Layout	Yacine Ben Chehida

university of
groningen

Molecular ecology and evolution of the porpoises

PhD thesis

to obtain the degree of PhD at the
University of Groningen
on the authority of the
Rector Magnificus Prof. C. Wijmenga
and in accordance with
the decision by the College of Deans.

This thesis will be defended in public on

Friday 15 October 2021 at 16.15 hours

by

Hedi Yacine Ben Chehida

born on 28 April 1989
in Tunis, Tunisia

Supervisor

Prof. B. Wertheim

Co-supervisor

Dr. M. C. Fontaine

Assessment committee

Prof. L. W. Beukeboom

Prof. O. E. Gaggiotti

Prof. A. D. Foote

"When Creationists talk about God creating every individual species as a separate act, they always instance hummingbirds, or orchids, sunflowers and beautiful things. But I tend to think instead of a parasitic worm that is boring through the eye of a boy sitting on the bank of a river in West Africa, [a worm] that's going to make him blind. And [I ask them], 'Are you telling me that the God you believe in, who you also say is an all-merciful God, who cares for each one of us individually, are you saying that God created this worm that can live in no other way than in an innocent child's eyeball? Because that doesn't seem to me to coincide with a God who's full of mercy'."

David Attenborough.

Table of Contents

Chapter 1

Introduction.....	7
-------------------	---

Chapter 2

Mitochondrial genomics reveals the evolutionary history of the porpoises (Phocoenidae) across the speciation continuum.....	65
---	----

Chapter 3

No leading-edge effect in North Atlantic harbor porpoises: Evolutionary and conservation implications.....	116
--	-----

Chapter 4

Harbour porpoise losing its edges: genetic time series suggests a rapid population decline in Iberian waters over the last 30 years.....	195
--	-----

Chapter 5

Genetic homogeneity in the face of morphological heterogeneity in the harbor porpoise from the Black Sea and adjacent waters (<i>Phocoena phocoena relicta</i>).....	215
--	-----

Chapter 6

Genetic footprint of population fragmentation and contemporary collapse in a freshwater cetacean.....	256
---	-----

Chapter 7

Synthesis.....	310
----------------	-----

Appendices

Summary.....	345
Samenvatting.....	351
Acknowledgements.....	359
Author affiliations.....	370