

The Mauritanian Atlantic coast and continental shelf can be considered a threatened biodiversity hotspot.

Monitoring Large Marine Vertebrates Through DNA Barcoding

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Biodiversity monitoring of marine habitats often targets areas of high species richness or of specific conservation concern. Both of these criteria apply to the coast of Mauritania due to the productive Canary Current upwelling system and growing maritime transport, along with the increasing use of the Mauritanian continental shelf by artisanal and industrial fisheries as well as oil and gas exploration and exploitation. In 2012, concerns for the risks of significant human impact on marine biodiversity led to the establishment of the Programme “Biodiversité, Gaz, Pétrole” (BGP; www.programmebgp.mr), spearheaded by the Mauritanian Ministry of Environment in close cooperation with the Ministry of Fisheries and the Ministry of Oil.

With the objective of establishing environmental baselines for several ecological and environmental parameters, field missions were a core activity of the programme. For the monitoring of large marine vertebrates, surveys of strandings were implemented every three months, focusing on the identification of species, quantification of individuals and diagnosis of possible causes of death (Mullié *et al.* 2013, DOI: [10.13140/RG.2.1.3988.9361](https://doi.org/10.13140/RG.2.1.3988.9361)).

During one such mission in November 2013, a field research team led by W. Mullié found a 4 m long, juvenile baleen whale stranded south of Chott Boul near Diawling National Park. The whale could not be collected, and its identity could not be determined in the field, partly due to advanced decomposition. Some of the rorquals, and especially their juveniles, including Bryde’s (*Balaenoptera brydei*), Eden’s (*B. edeni*) and Omura’s whales (*B. omurai*), are difficult to distinguish morphologically, considering that their taxonomy remains unresolved and both intraspecific and interspecific variations are poorly described. Indeed, the complex phylogeny of cetaceans leads to new or formerly unrecognized species still regularly being described or resurrected.

With limited morphological evidence, DNA analyses can significantly boost the number of positively identified stranded cetaceans (Alfonsi *et al.* 2013, DOI: [10.3897/zookeys.365.5873](https://doi.org/10.3897/zookeys.365.5873)); therefore, skin samples were sent for DNA barcoding. Despite poor sample quality due to decomposition, the sequencing of COI, *cytb* and the mitochondrial control region, for a total of 2,656 bp, revealed unambiguously that the specimen was an Omura’s whale.

As the Omura's whale had never before been recognized in the Atlantic Ocean despite centuries of cetacean research and commercial whaling, this added a new species to an already rich catalog of Mauritanian cetaceans. While the range of the Omura's whale was previously thought to be restricted to the tropical and subtropical Western Pacific and Indian Oceans, a population was described off northwestern Madagascar in 2015, some 11,000 km away from Mauritania (Cerchio *et al.* 2015, DOI: [10.1098/rsos.150301](https://doi.org/10.1098/rsos.150301)). The stranded individual could

Omura's whale, never before recognized in the Atlantic Ocean despite centuries of cetacean research and commercial whaling, was not an obvious candidate ID for the stranded animal.

theoretically have migrated to Mauritania from Madagascar but this is unlikely for a juvenile. Instead, it might belong to a hypothetical Eastern Atlantic population.

This discovery is a typical example of the benefits of systematic large-scale monitoring

of biodiversity within strongly exploited ecosystems. Marine mammals are often considered relevant sentinels of the overall health of the world's oceans. Periodical field monitoring of the Mauritanian coast on a long-term basis, applying both morphology and DNA-based identifications of large marine vertebrates, should allow detection of any natural or anthropogenically-generated variations in species diversity and their relative composition, reflecting significant environmental changes. The Omura's whale might well become a flagship species for the conservation of Mauritania's marine wildlife in this ecologically and economically important region.

For more information about this research, see DOI: [10.1080/17451000.2015.1084424](https://doi.org/10.1080/17451000.2015.1084424)

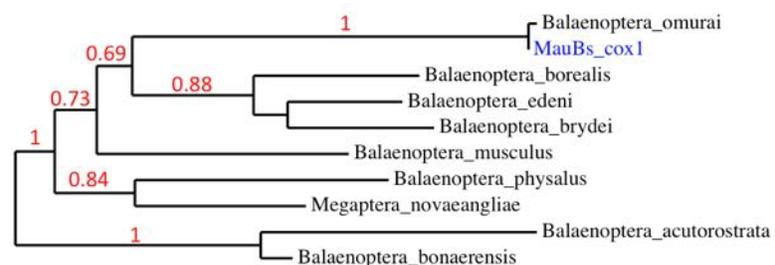


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Above: Specimen “MauBs”, the first Omura's whale *Balaenoptera omurai* found in the Atlantic Ocean (November 3, 2013).

Below: ML tree-based identification of specimen MauBs. The sequences of three different markers (two partial coding sequences of COI and *cytb*, and the D-Loop) were determined and aligned with reference sequences, and a ML tree was constructed. The sequences of the specimen MauBs and of the *B. omurai* group in a monophyletic clade were supported by a maximum bootstrap of 1 (figure shows the example of the COI sequence).

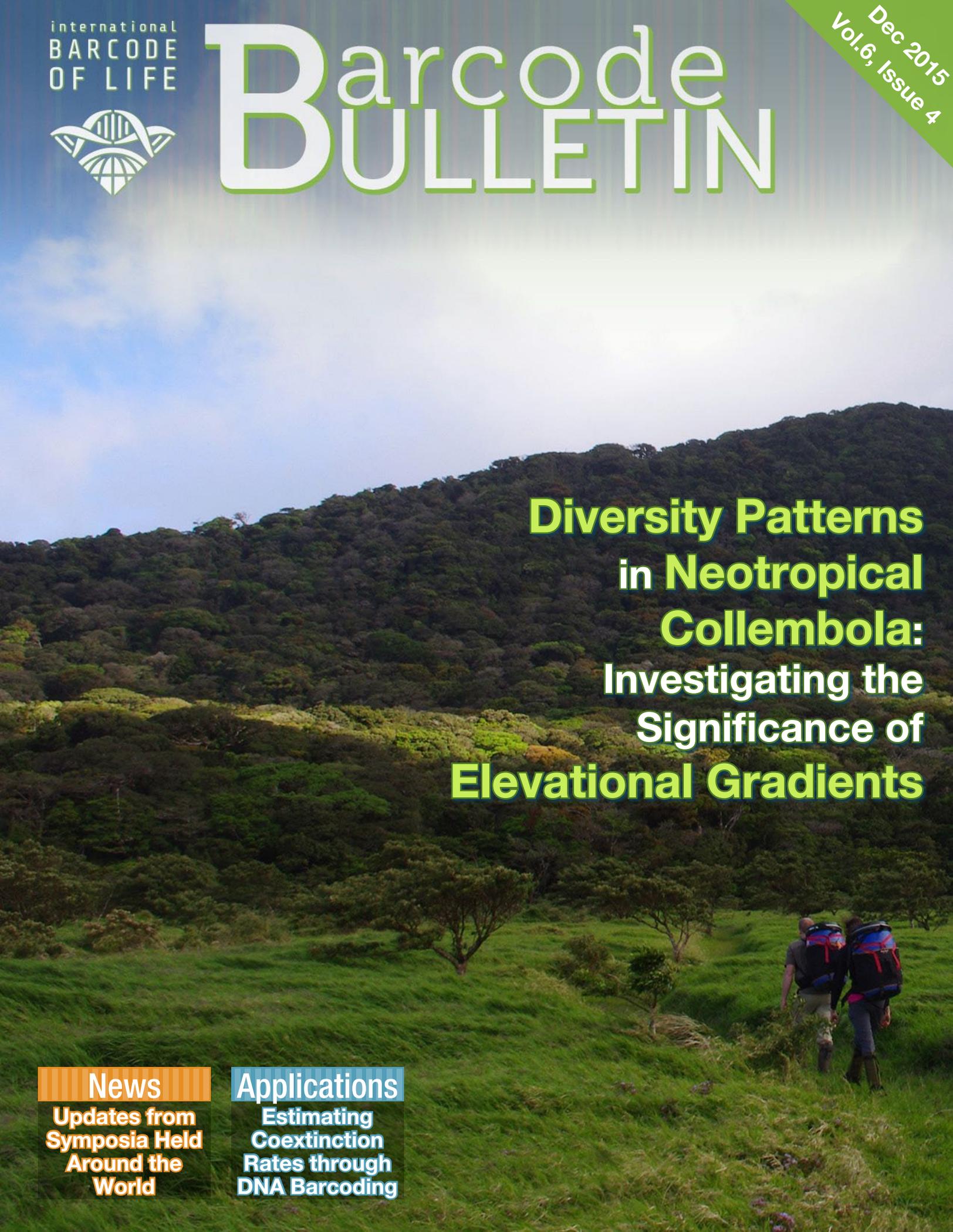


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Diversity Patterns in Neotropical Collembola: Investigating the Significance of Elevational Gradients

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Welcome to our December 2015 issue.

Another eventful year has passed with the 6th International Barcode of Life conference as a fantastic highlight. 600 researchers from 50 nations, over 200 talks, more than 100 posters - far more than our little newsletter can ever convey even in a year with 4 jam-packed issues. Nevertheless, we are looking back at another successful year, and we will try to keep the momentum going that the conference started.

This issue contains more prize winners from the conference and a lot of good news with respect to funding and national initiatives.

We wish you a happy holiday season and a healthy and prosperous New Year.

Dirk Steinke
Editor-in-chief

The Slovak National Museum-Natural History Museum obtained financial support of 1.7 M € from the EU European Regional Development Fund for building a DNA lab and other infrastructure to barcode the flora and fauna of Slovakia in 2016 – 2023. With the added capacity, the museum plans to barcode 1000 species in the coming years.

The German Barcode of Life Network (GBOL) was awarded a further 6.3 M € by the German Federal Ministry of Education and Research to extend the German barcode reference library to contain all common and frequent species, as well as important agricultural pests, invasive, health-relevant, Red List, FFH (Flora Fauna Habitat Directive), indicator and specific application-relevant species, and to develop DNA barcoding applications.

Through support from CONICET and other institutions, both national and international (including la Fundación Williams), the iBOL Argentina Fund has opened a **call for research proposals** with the aim of promoting the preservation of specimens of the country and region for DNA barcoding. The iBOL Argentina Fund is accepting proposals until January 31, 2016 and will finance up to 30 projects at a maximum of 50,000 pesos each. Researchers with accepted proposals are expected to participate in the special training workshop *Leading Labs Training Workshop for DNA Barcoding*, which will take place at the Museo Argentino de Ciencias Naturales Bernardino Rivadavia in 2016.

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