

A photograph of a dirt path winding through a lush green forest with tall trees and dappled sunlight. The path is covered in fallen leaves and mossy rocks on the right side.The ERGA logo, featuring the word "ERGA" in white capital letters with a stylized European Union flag (a circle of stars) to the left, all set against a teal background.The iBOL Europe logo, featuring a stylized DNA double helix above the text "iBOL EUROPE" in white capital letters, all set against a green background.

Connections

9. How communities use genomics to make better choices

The European Reference Genome Atlas (ERGA) and the European node of the International Barcode of Life (iBOL Europe), two international communities of scientists brought together under the Biodiversity Genomics Europe Project, are joining forces for a series of blog posts that explore the fascinating world of Biodiversity Genomics and the intersection of their communities.



**Biodiversity
Genomics
Europe**

BiodiversityGenomics.eu

Using genomics to make better choices



BY CHIARA BORTOLUZZI, KASIA FANTONI, CHRISTIAN DE GUTTRY AND LUISA MARINS

People often ask what working with DNA can do outside the lab. The short answer is this: it helps people make better decisions about the places and species they care about. Let's go back to our book metaphor: barcoding tells us which book we hold, while reference genomes allow read every page of that same book. The real impact starts when these pages guide fishers, farmers, health officers, park rangers, and local councils.

Let's make a few examples...

A coastal town wants to know if adding sand to a beach will hurt a tiny local fish. Barcoding confirms if the fish is present before and after the operation. Reference genomes help to show how populations connect along the coast and which beaches serve as nurseries. Engineers can then change the sand plan and timing. The council can establish straightforward rules for follow-up. Tourism and wildlife both win.



Fishers ask how science can protect jobs and fish stocks. DNA from caught fish shows where one stock ends and another begins. Rules on catches and seasons can then align with nature rather than relying on guesswork. Trust grows in what is caught and sold and in what the sea can give away without harm



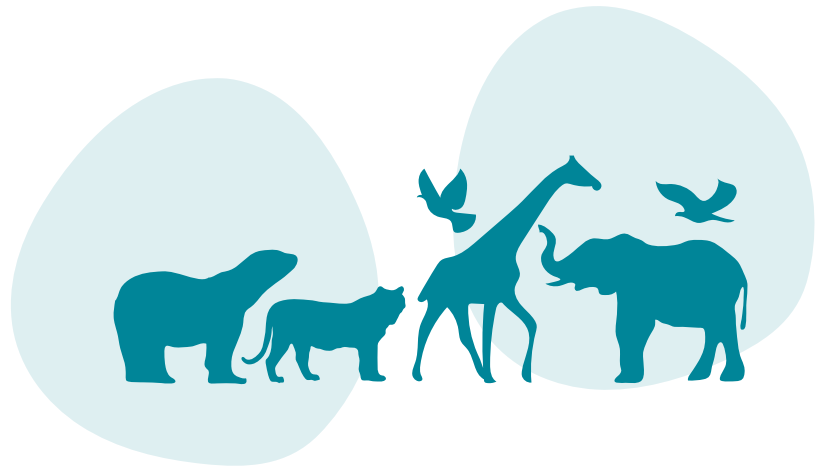
Health officers worry about mosquitoes and mosquito-borne diseases. Barcoding tells look-alike species apart. Reference genomes are the foundation to explain which lineages bite people and where they breed. Local teams can then use simple test kits to track changes and spot early signs of resistance to sprays. Action can focus on the right places.

Farmers and nature managers face choices about wildlife corridors and reintroductions. A small mammal cut off by a drainage canal shows in its DNA. Movement has stopped. The fix is practical. Restore portions of habitat and reconnect patches before population declines.



Gardeners, seed banks, and coastal protection officers want their plants to thrive. DNA surveys show whether a plant spreads by clones or seed. They also tell how large the healthy breeding pool is and which variants cope with heat, frost, salt, or drought. This guides seed choice and habitat care. It also supports monitoring that works across borders, museums, and herbaria. Plants that hold a coastline in place can then be managed for the long term, not just until the next storm.

Zoos, aquariums, and rescue centres want their work to count. Reference genomes help choose the best animals to establish a new breeding programme to avoid inbreeding, and which animals to use for the biobank.



What do all these stories have in common?

A way of working that brings people (stakeholders) in from the start.

Data comes at a later stage with training tools and scientific outreach that answer local needs. That is how pages become policies. The benefits are felt beyond the lab in safer seafood, smarter control of disease, fair rules for beaches and forests, and communities that can point to solid evidence when it matters.

