

BioAlfa confronts the Biodiversity and Climate Crisis through public involvement, knowledge, and economic potential of its wild biodiversity.

For real and permanent conservation to occur, the people that own the country and its wild biodiversity **have to** want its biodiverse wild areas to survive. The only way that will happen is through “everybody” truly seeing the living species as a public service – for government, academia, commerce, legislation, private entrepreneurs, NGOs, and all the other ways people organize. It is directly analogous to literacy. We all maintain learn and maintain literacy, personally and institutionally; it is useful to all at some time. Bioliteracy is knowing and knowing how to sustainable use wild biodiversity, its ecosystems, and its individual actions, with minimal and naturally reparable damage.

BioAlfa: “know the biodiversity of thy country”. This means bioliteracy for everyone for all endeavors across society: climate change resiliency, bioeconomics, restoration of maltreated nature, and adjustment to national carrying capacity, as a global tropical example of what is possible. Its process is the only chance for true conservation into perpetuity for large tropical wildlands.

To know wild biodiversity, to perceive its possible or real interactions with each of us, we need to know how it goes about its life. Society has to know i) what it is, ii) what it does, iii) where it is, v) how to find it, and vi) do it publicly on the web, in order to build some portions of it into their lives. And then put that into the public domain, like literacy, available to everyone at any age, anywhere, anytime, at no cost at that moment – a public service, as is a dictionary and library. Every Costa Rican species is a book, nearly all unread yet readable if named, opened and in hand or eye. BioAlfa aims to name, open and sustainably use its wild library with modern technology, its remaining biodiversity, and Costa Rican human resources.

Before 2003, the world lacked the philosophy, technology and protocols to execute a BioAlfa for a whole tropical country, its 5 million people, and Costa Rica’s 1+ million terrestrial multicellular species. Today, for \$100 m spread over ten years, Costa Rica can do it if the cash is available timely to match Costa Rica’s sweat equity, plus surgically directed international collaborations. BioAlfa goal is to “DNA barcode” Costa Rica in 10 years. To deliver the dictionary and library to its society. Every species can be known by a tiny unique bit of DNA.

Costa Rica itself needs to come to know its own biodiversity -- discovering and documenting it -- rather than through yet more centuries of occasional expeditionary self-interested groups from international academia, commercials, and the conservation industry. Many sectors of Costa Rican society will achieve a very healthy dose of bioliteracy – high school and university students, park guards, medical workers, transportation workers, ecotourism guides, farmers, biodiversity prospectors, pest control workers, fishers, climate change ameliorators, loggers, amateur enthusiasts, and many as yet other professions as yet unrealized. And then, like learning to read, the next generation will construct on that technology and discovery process, just as we learn from libraries, the internet, documents, and all the other things we do with literacy. Note that we all start very simple, and then construct

outward according to our needs. Some of us write poetry and novels, some do legal documents and scientific publications, some write and read manuals, some design national plans, and we all write home to family.

The Costa Rica's government authorized and facilitated BioAlfa pilot project, Area de Conservación Guanacaste (ACG), began in 1985 under the concept of natural restoration of tropical dry forest. The transformative ACG was rooted in a classical, legislated, guns-and-gold badge national park. Today it is a working model of the new BioAlfa conservation philosophy of 169,000 ha of tropical very diverse forest through its local, national and international integration. It works. It cost \$107+ million, with a staff of ~150 resident Costa Ricans. ACG underlines a key trait of BioAlfa – it combines government stolid legal bureaucracy with the entrepreneurial spirit of persons and companies. BioAlfa started (2020) a tentative first pass at extending its proven ACG conservation, restoration, climate change monitoring/avoiding, and social integration philosophy to its own entire country. COVID created stasis. A penniless but very willing government is combined with a private enthusiasm.

The current BioAlfa national extent pilot project is two years of mass insect trapping by National Park staff, throughout Costa Rica's National Park System (SINAC) as government sweat equity. The first year results are poised in a Canadian freezer-farm ready for analysis and development (estimated 70,000 identified species among a million insects), but with no budget for the next year step that could technically begin tomorrow.

To repeat, the BioAlfa process is meant to be a South-South new kind of conservation. It has a serious chance of surviving indefinitely because its knowledge base facilitates the rendering of wild biodiversity and its ecosystems into being nondestructively wanted by many sectors of its surrounding different persons and groups for their own agendas – just as is the case with why we maintain and legalize hospitals, schools, universities, companies, highways, internets/web sites, medical insurance, football matches, dances, airports, laws, libraries, religions, elections, and children.

For millions of years, humans have focused on removing wild biodiversity to consume it and to make room for more of us and our domestic extensions of our genomes. We have been burning and plowing the world's natural libraries and treating the world as our city dump for CO₂, plastics and other industrial chemicals. However, we have also selected important biological bits for our use here and there, usually by serendipity. But the inheritors of those biobits generally do not honor, protect, and cherish them in their wild state. Who cares about the fungi who gave us penicillin? Who invests in the survival of the wild ancestors of our livestock and coffee, and their ecosystems? And the largest enemy to biodiversity is the very human tendency for an entity to decide to commandeer the wild area for their particular agenda.

Costa Rica earns at least \$3.5 billion annually from tourism of its friendly greenness **that** also ameliorates climate change, yet invests back less than \$150 million in perpetuating it. Biodiversity is Costa Rica's greatest natural resource and potential. For a viable business plan,

you need to know the names and properties of the items in your green warehouse and library. BioAlfa will function in as many of its sufficiently large relatively intact tropical ecosystems as will be allowed, starting with Costa Rica's 25% remaining wildlands. The word needs to spread south-south by example rather than by preaching. Tomorrow, an audience of 400 Colombian businesses have asked to learn about BioAlfa by Zoom from ACG, organized by Nutresa Group.

In sum, BioAlfa offers a new way of knowing the wild systems that molded us evolutionarily into what we are. It will simultaneously render its "wild" into being yet another kind of highly sustainable crop for humans, one that almost entirely takes care of itself if gardened cautiously. Unfortunately, we are now not at all gardening cautiously. Perhaps we could be friendly to the survivors by welcoming them to society's negotiating table?

Cost right now? \$3m/year guaranteed for three years, judiciously aimed at the technical and logistic continuation of the variety of pilot projects already initiated with the ACG budget, with a minimal staff that could be very beneficially a Department of MINAE, effectively biodeveloping MINAE's gardens into Costa Rica's socioeconomy rather than merely guarding them. What does BioAlfa have to do with amelioration the impact of climate change? Climate change kills wild ecosystems. If wild ecosystems are not valued by their tropical society, their death will be ignored, and little will be invested in their survival by their own society.

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Supporting Material

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