

## THE GREATEST IMPEDIMENT TO THE STUDY OF BIODIVERSITY IN COLOMBIA

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Colombia, a country rich in biodiversity, has become, in recent years, a country rich in obstacles and barriers to conducting inventories and studies of this diversity. While most countries have few or simple laws to facilitate biotic inventories and regulate the export of flora and fauna for scientific research, in Colombia the government and its respective agencies (ministries and corporations) have created a thicket of rules, resolutions and provisions that discourage all researchers, national and foreign.

To study the Colombian biodiversity, the investigator must solicit a raft of clearances, permits, certificates and other documents to be able to do fieldwork, capture, transport, export, import, or borrow specimens. Similar measures must be taken in order to send specimens to specialists in other countries, and even to import dried specimens that were deposited in museums decades or centuries ago (whether the material is of Colombian origin or not). Even to return Colombian material that has been sent on loan, one has to cut through a degree of red tape that is unheard of in most countries.

It is astounding that those of us who wish to do science for the good of the country are faced with so many legal and administrative barriers, while those who profit illegally from the exploitation of our biological resources act with impunity. It is true that there must be regulations and standards for the protection of our flora and fauna, but these should be simple, easy to follow and designed to protect and promote research activity.

These are some of the difficulties a Colombian researcher must confront to be able to study the Colombian flora and fauna. Incredibly, it is no less difficult to study species from other parts of the world. In order to receive material on loan from museums in other nations, the investigator must have a research permit and a separate import permit that explicitly describes the project. What competence do the authors of these rules have to restrict the investigation of species from Africa, for example? What gives the Colombian state the power to interfere in science in other parts of the world?

Internally, some parts of the country are practically “off limits” for any type of study, as the amount of paperwork, as well as being cumbersome and time consuming, is also prohibitively expensive: almost all Regional Corporations require researchers to pay processing fees. This lack of support at home explains why many of our professionals and university students, trained at the expense of the Colombian people, emigrate to other countries to seek employment. This contrasts sharply with the efforts of the Colombian State and private academic institutions to train and employ high quality professionals.

Many of Colombia’s academic institutions were engaged in biodiversity research decades before environmental issues became politically attractive, having dedicated considerable human and material resources to protect and study Colombian biodiversity.

These same universities and research centers that have invested heavily in their biological collections must now be allowed to continue their work in service of the nation: promoting culture, development of human capital and helping to shape national identity.

The 21st Century is the century of genomics and molecular methods for the study of planetary biodiversity. The study of genes is now routine even among undergraduate students, and is a basic component of any project or scientific publication. In Colombia, the use of genes for biodiversity studies is still considered taboo. In the past two decades (since the introduction of legislation ostensibly designed to protect biodiversity), there have been only a handful of permits granted for access to genetic resources; many who went to the trouble to gather the initial documents gave up because of the high academic cost of devoting so much time to comply with legal requirements. This, in turn exacerbates the system's distrust of scientists. It also demonstrates that those who draft the laws were only summarily advised about the relevant scientific issues. Any professional with knowledge of genetics knows that DNA in and of itself is not a gold mine, and that much of the molecular information that is collected only has value for basic science.

Our lawmakers seem to forget that Colombia has no granite boundaries that isolate us from our neighbors, and the large number of populations of plants and animals of our forests and rivers flow freely between countries, invalidating any claims to "exclusivity" of a species' genetic profile. Any professional with basic knowledge of biology knows that if a gene of interest in commercial terms is found in one species, it may be present in other related species. The notion that each species and each gene is a potential gold mine is just political hyperbole and TV propaganda. Genetic studies yield much more data for basic research than for commercial

purposes. Nevertheless, in the Ministry of Environment (MMA), the assumption is that all biologists perform DNA analyses for commercial ends. How else to explain a system of paperwork that treats the applicant as a potential criminal?

Added to this bureaucratic landscape are the uncooperative and sclerotic Regional Secretariats of the Environment. Far from helping biodiversity researchers, they hamper the already arduous process of scientific investigation. If a researcher dares to express any doubt about a permit procedure, his/her samples can be ruthlessly confiscated and taken to the "basement" where they may remain months or years without having their status resolved. Individual researchers and even institutions have had their research programs cut short because of such irrational zeal for confiscating specimens; the extreme bureaucratic measures necessary to get specimens out of seizure can take up to three years or more, without guarantee of resolution. Why not simply allow the researchers to continue working while questions about biological material permits or other paperwork are being clarified?

Naturally there must be laws and regulations that protect our resources. But why can't they be clear and simple? Why wait so long to have the right to study our biological resources? Why is research in Colombia penalized, rather than stimulated?

Most gravely, scientific research on our biological resources has diminished; in many cases the delays and expenses can stop research in its tracks, thereby reducing our capacity to assess the structure, richness and dynamism of our biota. As a result of there being less basic information available about Colombia's biodiversity, the capacity to make informed decisions about conservation, monitoring, and proper use of resources is also reduced.

This mania for red tape only serves to isolate Colombia from the scientific and conservation communities of the World. Most countries foster and facilitate biodiversity research, but in Colombia, arcane procedures preclude or discourage normal scientific dialogue regarding loans, shipment and exchange of specimens for taxonomic revisions, studies in phylogeny, biogeography, ecology and other natural science disciplines. This closure to the outside world amounts to cultural suicide and extreme arrogance in the presumption that we alone have the ability to characterize biodiversity. The task of documenting global diversity has taken over 250 years and involved scientists from around the world, and yet even by the most optimistic estimates, we have achieved only 30% of our common mission.

Thus, we (the community of biodiversity researchers) ask of the MMA that our right and duty to do our work honorably and efficiently be respected, and that the punishing rules, procedures and permits imposed by the State be eliminated so that we may be allowed to inventory and study Colombia's biodiversity.

For purely scientific studies, the formalities should be reduced to a simple approval by the Ministry of Environment, as long as the researcher agrees to deposit his/her specimens in a certified museum or biological

collection. All additional procedures should be eliminated, as they constitute a serious obstacle to the development of science in Colombia. The requirement that certified institutions must apply for special permits to import biological specimens should also be lifted; it is grotesque and unnecessary and should not exist in any civilized country. The role of local environmental "control" agencies in permit processes should also be reevaluated; officials in regional offices should focus on the issues that really are destroying our biodiversity such as wildlife trafficking and environmental pollution.

Only once the restrictions upon us are lifted can our scientists and institutions get on with the task entrusted to us, a duty formalized in the oath we take upon graduation as professionals: to inventory, know, understand and inform others about the richness of Colombia's organisms and ecosystems, among the greatest treasures that a country may possess.

Colombia faces many serious threats to its natural resources, such as deforestation, mining, water loss and local extinction of plants and animals. Bureaucrats of the MMA and other environmental agencies, many of whom have never set foot in a rain forest or climbed a mountain, should dedicate their energy to fighting these threats instead of writing laws against biologists.

# Emerging Conflicts between Biodiversity Conservation Laws and Scientific Research: the Case of the Czech Entomologists in India

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## Introduction

The arrests and subsequent conviction of two Czech entomologists by an Indian court in September 2008 has opened a Pandora's box of controversy. Petr Švácha, of the Institute of Entomology at the Biology Centre of the Academy of Sciences of the Czech Republic, and his associate Emil Kučera (an amateur entomologist) were arrested for collection of beetles and butterflies without a valid permit from the Singalila National Park in the Indian state of West Bengal, a violation of the 1972 Indian Wildlife Protection Act and the 2002 Biological Diversity Act. The arrests triggered debate in the global scientific community regarding the implications of biodiversity conservation laws for scientific research (Venkataraman 2008) and underscored the tensions in the three-way relationship between scientific collecting, species conservation, and efforts of nations to protect themselves from biopiracy.

Roughly 1200 scientists from across the world have protested the arrest and have petitioned the government of India for the scientists' immediate release (Dubey 2008). In determining whether the arrest and conviction of the Czech entomologists erected unreasonable barriers to the access of biological resources for legitimate scientific research two pertinent questions need to be addressed: Were the Indian officials overzealous in arresting the two researchers? And is the scientific community justified in its criticism of conservation laws now that two of its own have broken them?

## Regulations on Collection of Insects

Insect-collecting regulations tend to mirror regulations for collecting vertebrate specimens, with most countries,

including India, enacting umbrella restrictions that prohibit both types of collecting in protected areas. These policies are largely based on data collected from vertebrate populations rather than on data collected specifically for insects, and the legitimacy of these policies for insect taxa has been brought into question (Hook 1997). Although these restrictions are meant to serve as increased protection measures, they may be inconsistent with current knowledge of insect biology, specifically with identification problems associated with small sample sizes and inter- and intraspecific phenotypic variation in insects (Hook 1997; Samways 2007).

The Indian government is not alone in having such umbrella restrictions in place for insect collection. The U.S. Fish and Wildlife Service enacts similar restrictions and has sued several collectors over the removal of insect specimens without permits on protected lands (Hook 1997). Nevertheless, the difficulties in physically removing large percentages of individual insects from a population and the prodigious reproductive capacity of most insects mean that overcollection of insects is rarely a threat (Small 2007). Despite the lack of scientific studies specifically assessing the impact of collection on vulnerable species, the general sense is that collectors rarely, if ever, are the primary cause of insect extinctions (Hook 1997; Small 2007). Nevertheless, impacts of collection are not the main issue in this case.

Indian forest departments and their officials are generally supportive of researchers with the necessary authorizations. The Wildlife Protection Act requires a person wishing to enter a protected area for scientific research to have prior permission of the Chief Wildlife Warden. The Czechs did not have permission to enter Singalila National Park. In addition to their unauthorized entry, it is alleged that they were in possession of more than

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1500 specimens of butterflies, including the endangered *Delias sanaca*, at the time of their arrest (Gusai 2008).

It was the large number of specimens collected by Švácha and Kučera that attracted the attention of Indian authorities. Furthermore, not everyone is convinced that they were collecting insects for research alone. Isaac Kehimkar, of India's Bombay Natural History Society, said, "a researcher wouldn't need so many specimens, 15–20 would do" (Roy 2008). On the other hand, Max Barclay, a senior curator at the Natural History Museum in London, has called for the entomologists' release, stating that "these people are sincere, genuine entomologists, and the specimens that they have collected are of no commercial value" (Nature 2008).

Many in the scientific community, assuming Švácha and his associate had no commercial motives, believe their conviction for collecting the insect specimens is an example of excessive prosecutory zeal by the Indian authorities. Švácha was fined Rs 20,000 (US\$415), and Kučera was sentenced to 3 years of imprisonment and fined Rs 60,000 (US\$1,250). It is also the disparity in the sentences that has attracted criticism. The judgment took into account Švácha's reputation as an entomologist of international repute and his educational qualifications. In contrast Kučera was granted bail, but was ordered to stay in India until his appeal came up for hearing in the Appellate court. However, Kučera jumped the bail and fled from India in October 2008. As a result Švácha now also faces the refusal of future visas for any continuation of scientific research in India.

### Conservation Laws and Benefit Sharing

Although the Czechs were arrested for violation of both the Indian Wildlife Protection Act and the Biological Diversity Act, it is their conviction under the latter that touches on larger issues critical to the intersection of conservation and scientific research. India and other developing countries are becoming increasingly wary of foreign research on indigenous biological resources. The extreme caution with which the Indian government views foreign researchers may be linked to a move for increased sovereignty over local resources. Patents on what many Indians consider traditional knowledge, granted to western researchers under the Trade-Related Aspects of Intellectual Property Rights (TRIPS) regimes of the World Trade Organization (WTO), have fueled national outrage. For instance, turmeric—a tropical herb commonly grown in India—has been traditionally used in India as a dye, a cooking ingredient, and as an antiseptic medicinal agent. In the mid 1990s, turmeric became the subject of a patent dispute with ramifications for international trade law. A U.S. patent on turmeric was awarded to the University of Mississippi Medical Center in 1995, specifically for the "use of turmeric in wound healing," that granted them the exclusive right to sell and distribute turmeric for this

purpose (Slack 2005). The patent was challenged by India's Council of Scientific and Industrial Research, which questioned the novelty of the university's "discovery." Although the patent was revoked following investigations by the U.S. Patent Office, it stood for 2 years despite widespread evidence that the process was not novel and had been used traditionally in India for thousands of years. A similar dispute on the potential patenting of Basmati rice followed, leading to concerns in India as to the economic and socially damaging impacts of such legal "biopiracy" (Slack 2005).

The United Nations Convention on Biological Diversity (CBD), the principal legal instrument for protection of international biodiversity, establishes three objectives: conservation of biological diversity, sustainable use of its components, and fair and equitable sharing of the benefits arising from the use of genetic resources. The third objective, in particular, has raised concerns in developing countries such as India. Although Article 15 of the CBD affirms the sovereign authority of a country over its natural resources, it also stipulates that countries should facilitate use of their resources. This has been interpreted to mean that national resources should be available for research under a reasonable regulatory regime (Iles 2003). In addition Articles 15 and 16 of the convention grant the right of access by corporations and private individuals to biological resources for research (Kamer-Mbote & Cullet 1999).

The CBD is, however, only a framework agreement. It requires implementation by its specific parties to give effect to the provisions it lays out (Barrons & Couzens 2004). The Indian Biological Diversity Act is an outcome of this requirement of the CBD. The primary objective of the Indian Biological Diversity Act as embodied in its preamble is "sharing of benefits." The act is primarily defensive in its intent, enacted to prevent the biopiracy of India's natural resources. In particular the act empowers the Indian government to share in any profits that may accrue out of a patent acquired on products or processes from a biological resource of India.

The Czechs disregarded Section 3 of the Biological Diversity Act, which expressly requires a foreign citizen to seek prior approval of India's National Biodiversity Authority for collection of a biological resource for research or commercial utilization (Indian Biological Diversity Act 2002). Failure by the Czechs to obtain the necessary permits to enter into a protected area and collect insect specimens led to a legal presumption that they had commercial motives.

The conviction—the first under the Indian Biological Diversity Act—has laid the foundations of the boundary demarcating academic research and biopiracy. It has established law regulating the conditions under which science can secure equitable access to biological resources and share the benefits that arise from those resources. Paradoxically, breach of these laws by Švácha and Kučera may ultimately result in significant losses for science by

provoking additional barriers to scientific research and restricting access to resources. Nevertheless, the Indian government prosecuted a straightforward violation of its laws. These laws were established in accordance with international treaties to meet the conflicting demands of expanding Intellectual Property Rights regimes and the need to affirm sovereign authority over natural resources. This case needs to be widely advertised to scientists to increase awareness about biodiversity regulations worldwide. We hope the case will make scientists aware of the biological-collecting procedures in India and that such procedures may exist in other nations and that it will facilitate the increasingly difficult task of governments to promote conservation and the sustainable use of its biological resources.

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