Geoforum 66 (2015) 1–10

Contents lists available at ScienceDirect

Geoforum

journal homepage: www.elsevier.com/locate/geoforum

Re-mining the collections: From bioprospecting to biodiversity offsetting in Madagascar

Benjamin D. Neimark [a,*], Bradley Wilson [b]

[a] Lancaster Environment Centre, Lancaster University, Bailrigg, Lancaster LA1 4YQ, United Kingdom
[b] West Virginia University, Office: Brooks Hall 145, 98 Beechurst Ave., Morgantown, WV 26506-6300, United States

ARTICLE INFO

Article history:
Received 8 May 2014
Received in revised form 27 August 2015
Accepted 1 September 2015
Available online 5 September 2015

Keywords:
Labour
Scientific institutions
Political ecology
Green grabbing
Bioprospecting
Biodiversity offsets
Madagascar
Africa

ABSTRACT

Madagascar has always held a special place on the bioprospecting map. Designated as one of the world's "hottest" biodiversity hotspots, scientists believe the extremely high flora and faunal endemism contain unique potential for the commercialisation of natural products. Years of collections by bioprospectors in Madagascar are beginning to pay off, not necessarily from drug discovery, but through the biodata from their botanical collections. In the paper, we highlight the links between labour and value over time to illustrate the historical process of collecting inventories of biodata and calculating biodiversity metrics. As we demonstrate, biodata originally used for the purposes of drug discovery and scientific exploration are now being repurposed in biodiversity offsetting programs for multinational mining operations in Madagascar. This project of "re-mining" biodata has reinforced the power of select research institutions which now service their expertise for biodiversity offsetting initiatives. In sum, botanical agencies are far from apolitical actors in these new iterations of market-conservation but active participants in a new age of green grabbing.

© 2015 Elsevier Ltd. All rights reserved.

1. Introduction

For more than thirty years conservation scientists have been engaged in a massive global effort to collect, catalogue and chemically screen the world's biodiversity for drug discovery (known as bioprospecting). Since early days of conservation, nothing captured the imagination of the public more than the iconic image of the barefoot doctor seeking to cure humanity's ills under the canopy of the rainforests (Brosius, 1997; Voeks, 2004).[1] As Voeks remarks, "...the myth that pristine forest represents the primary repository of nature's medicinal providence" has provided the motivation and the funding necessary for conservation programs worldwide (Voeks, 2004: 868; see Reid et al., 1993). Bioprospecting was a shining example of the widely touted Integrated Conservation and Development Projects (ICDPs) at the 1992 Earth Summit in Rio (Neimark, 2012a).[2] To the scientific community at the time, bioprospecting opened opportunities to finance plant collection on an unforeseen scale; the perfect melding of conservation and capitalism (Brockington and Duffy, 2010). The discovery of new species, proponent's argued, not only increased the chances to unlock natures' chemical treasures, it also would lead to the revaluation of nature unleashing a global conservation effort that would protect these treasures for years to come. The conservation logic behind this "taxonomic call to arms" was to rapidly and efficiently create a biodiversity inventory before a crisis of massive deforestation and species extinction wiped out the world's biodiversity (Hayden, 2003: 57). Following suit, the capitalist logic held that any species not chemically screened was a lost opportunity to find a blockbuster drug.

For three decades, Madagascar has held a special place on the bioprospecting map. As one of the world's "hottest" biodiversity hotspots, scientists believed the extremely high flora and faunal endemism contained unique potential for drug discovery. For

* Corresponding author.
E-mail addresses: b.neimark@lancaster.ac.uk (B.D. Neimark), Bradley.Wilson@mail.wvu.edu (B. Wilson).
URL: http://www.research.lancs.ac.uk/portal/en/people/benjamin-neimark (B.D. Neimark).

[1] All attempts were made to protect the confidentiality of the participants of this research and information is reported anonymously. All names of research participants that do appear are pseudonyms.

[2] Most noteworthy were mass bioprospecting agreements between the Costa Rican Biodiversity Research Institute (INBio) and Merck and Co., and the US federally funded, International Cooperative Biodiversity Groups (ICBG).

http://dx.doi.org/10.1016/j.geoforum.2015.09.001
0016-7185/© 2015 Elsevier Ltd. All rights reserved.

instance, the primary directive one of Madagascar's longest running bioprospecting projects, the International Cooperative Biodiversity Groups (ICBG 1998–2013)[3] was to amass large volumes of plant material for drug discovery screening.[4] Yet, the dream of a perfect long-term union between conservation and capitalism under the rubric of bioprospecting proved a relatively short marriage. Most large projects to finance species collection and identification have tapered off from their peak in the early 2000s. Indeed the ICBG agreement itself came to a close in 2013. This raises a series of questions to which this paper seeks to respond. What happened to all the plant material collected for drug discovery? How is it now being used? And what is the future of biodiversity conservation in the absence of the drug discovery narrative?

In what follows we revisit what Parry (2000) has called "the fate of the collections." As Parry argued, "[c]ollecting is often perceived as being a one-off appropriation and transference of individual objects" rather than "the first acts in a complex process…that entails not only the acquisition but also the concentration, disciplining, circulation and regulation of flows of material" (2000: 375). The "danger," wrote Parry, was "focusing myopically on the point of collection and fixating on the specifics of particular compensatory agreements" while losing sight "of the much larger and far more significant questions surrounding the ownership, potential value, and future usage of the collections" (Parry, 2000: 376).

As we illustrate through more than a decade of field research on bioprospecting in Madagascar, the fate of biological data inventories (henceforth, biodata), including thousands of digitized and material floral herbarium specimens, once collected for the purposes of drug discovery are now being repurposed in biodiversity offsetting programs for multinational mining operations. In search of a way to revalue the large biodata inventories created during the era of bioprospecting, botanical gardens and other "centres of calculation" (Parry, 2000) that once transformed *in situ* nature into leaves, stems, and molecules for drug discovery are now servicing these *ex situ* collections and scientific expertise to help produce biodiversity offsets.

Biodiversity offsetting is the practice of reducing the net loss of biodiversity caused by intensive mining through the protection and mitigation of intact ecosystems. Biodiversity offsetting, particularly for large-scale mining projects, has become a key conservation strategy in Madagascar where corporate mining interests such as Sherritt and Rio Tinto seek to reshape their image as environmental stewards both locally and globally. There is a cruel irony here. Thousands of digitized and floral specimens that were once collected and transferred from Madagascar to inventories in the global North under a previous cycle of so-called "low-impact" bioprospecting collection are now being re-mined and transferred back to establish criteria and certify very "high-impact" mineral extraction.

This research contributes to critical studies of market-conservation (Arsel and Büscher, 2012; Brockington et al., 2008; Roth and Dressler, 2012) and the production and appropriation of nature in an age of "green grabbing" (Cavanagh and Benjaminsen, 2014; Corson et al., 2013; Fairhead et al., 2012; MacDonald and Corson, 2012). The biodiversity inventories described below are the product of the quintessential green grab – bioprospecting (Neimark, 2012a). However, in the important literature on green grabbing, there is less emphasis on the role of labour in the production of conservation value (for exceptions see Büscher, 2013; Lansing, 2012; Neimark, 2012a; Sodikoff, 2012, 2009; West, 2006).[5] Reflecting on past bioprospecting research (Brosius, 1997; Hayden, 2003; Neimark, 2012b; Parry, 2004) we show how biodiversity inventories are produced through labour processes that combine both conservationist and capitalist logics (Lowe, 2006; Sodikoff, 2012; Waterton et al., 2013). Building on Marx's (1976) treatise on commodity fetishism, we demonstrate how herbarium collections first used in drug discovery and then in offsetting schemes concealed the labour processes that brought them into being. We show that it takes hard work to produce biodiversity into a form of value through which capital can recognise it (Robertson, 2006). We argue alongside Sodikoff (2012) and others (Lowe, 2006; Waterton et al., 2013) that it is critical to account for the hard work of local scientists and manual labourers associated with collection. Reliable biodata inventories must be produced through a scientific division of labour that is organised around forms of knowledge and expertise that make biodiversity legible in ways that "conform(s) to the virtual reality defined by important Western models of society and nature" (West and Carrier, 2004: 485). The virtual reality of biodata inventories is ultimately dependent upon the material reality of collecting, preserving and transporting specimens. Our focus on labour demonstrates how uneven international divisions of labour are reproduced into low-wage manual and scientific labourers in the South, and high wage, knowledge professionals in the North. This attention on labour, we hold, is an important analytical contribution which can be used to critically examine a wave of new market-conservation interventions throughout the global south (Corson et al., 2013; Fairhead et al., 2012).

In the remaining parts of the paper we return to the process of bioprospecting collection to locate biodiversity offsetting within its historical context in Madagascar. First, we frame the practice of biodiversity offsetting as an example of market-conservation and suggest that it exemplifies the "audit culture" (or the systematic accounting of biodiversity) in market-conservation and echoes the spatial dynamics and power relations associated with historical and contemporary forms of green grabbing (Fairhead et al., 2012). However, we also argue that biodiversity offsetting fetishizes the scientific labour of collection that built the inventories through which green audits and reclamation efforts are designed. In section three we lay out the historical context of two ICBG collection institutions with very dissimilar development trajectories – the privately-funded US Missouri Botanical Gardens (MBG) and the Malagasy Pharmacological Laboratory (CNARP). We highlight the marginalization of CNARP in the post-bioprospecting context and how MBG has repositioned itself as the authoritative body within an emerging green "certification economy." This economy is deeply reliant on an emerging group of technical experts and professional consultants whose job it has become to define and approve of biodiversity offsets for mining in the global south. This is supported by the next section which provides a detailed ethnographic account of labour processes for both plant collection and chemical extracts used in bioprospecting. In section five, we explain how biodiversity is produced for offsetting using the metrics from herbarium indexing and the mass collections achieved under bioprospecting for drug discovery. We affirm that the practice of green auditing constitutes for offsetting a "double fetishization" (Goodman, 2004) of nature through a narrative around the production of offset spaces to mitigate the effects of extensive mining by multinational corporations such as Rio Tinto and Sherritt International. In our conclusion, we raise critical

[3] ICBG-Madagascar represents an eclectic mix of high-tech US laboratories such as the National Institutes of Health and Virginia-Tech, commercial partners, Dow AgroSciences, environmental NGOs Conservation International (CI) and Missouri Botanical Gardens (MBG), and Malagasy national laboratories, such as the National Centre for Applied Pharmaceutical Research (CNARP).

[4] Marine and micro-organisms were also collected.

[5] Sodikoff's (2012) in her excellent study of forest labour, aptly demonstrates the paradox of development and conservation project's workers which are undervalued and underpaid and thus remain reliant on destructive slash-and-burn (tavy) cultivation.

Download English Version:

https://daneshyari.com/en/article/5073591

Download Persian Version:

https://daneshyari.com/article/5073591

Daneshyari.com