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# Excessive red tape is strangling biodiversity research in South Africa

Preventing the over-exploitation of natural resources is vital to ensure that biodiversity is protected and conserved.[1,2] Legislation and regulations are therefore necessary to manage resource utilisation, but overly stringent legislation and regulations can have unintended negative consequences. For example, biodiversity research, much of which is state funded, is now subject to excessive red tape to the extent that overregulation is impeding progress. Researchers must navigate a myriad of laws, rules, permit requirements, ethics clearances and approvals, many of which require annual renewal, progress reporting, and submission of amendment applications for ongoing projects. Excessive red tape particularly hinders field-based research, and in our experience, has a negative impact on research productivity in South Africa. If current levels of bureaucracy and managerialism persist, we believe that the impact on biodiversity research in the country will be debilitating. Former South African Minister of Finance, Tito Mboweni, has acknowledged the negative impact of red tape on small business enterprise and economic growth in South Africa, and there are now attempts to reduce it.[3] So too, excessive red tape and overregulation of research should be rationalised to enhance knowledge generation and application.

Over the last decade, new legislation, new interpretations of established legislation and increasing administrative oversight have massively increased the administrative and compliance burden experienced by researchers in South Africa.[4] This particularly impacts field-based research, which typically requires various permits, permissions, and authorisations for (1) the collection of biological samples on public or private land, (2) performing certain procedures on animals, (3) transporting of biological materials and samples, especially when the transport is across provincial or international borders, as well as (4) the storage and usage of samples.

Most field-based research projects have a strong conservation theme, and their findings inform conservation policies and management so that South Africa's biodiversity can be protected effectively (e.g. as required by the *National Environmental Management: Biodiversity Act* (NEMBA) *No. 10 of 2004*).[5] Ironically, the legislation, managerialism and bureaucracy which are purported to be enacted for the very purpose of protecting South Africa's remarkable biodiversity are collectively now having a negative impact on conservation by hindering research. Overregulation of foundational biodiversity research has other knock-on effects which are detrimental to the achievement of national strategic goals. For example, undergraduate research training and skills development are enhanced through practical work in the field, which is negatively impacted because overwhelmed academics avoid field-based teaching due to the onerous regulatory framework that must be navigated and the unpredictable delays in permit approval. The number of postgraduate students managed and supervised by academic researchers is also curtailed by the administrative and compliance burden, slowing the development of local capacity and transformation, and extending the time taken for students to complete their postgraduate degrees. Slowed student throughput rates impact government subsidies to universities, further retarding capacity building and making biodiversity research less attractive as a career path.[2]

Red tape comes in many forms, and researchers must deal with it at many levels. In South Africa, more than a dozen different National Acts and accompanying regulations, which are regularly revised, can directly impact any field-based biological research project[4], requiring permits that may take months to be issued. Additionally, provincial regulations also require researchers to apply for permits for several activities, and so research programmes may require several permits from any given province. Moreover, broadscale projects conducted over more than one province require permits from each of the relevant provinces, each with its own permitting system and set of rules[6], with some requiring other permits to be in place before an application is considered. Thus, it is not uncommon for some field-based research projects to require upwards of 20 different permits, clearances and approvals to be issued before work can commence.[4]

Another layer of regulation comes with the requirements for animal ethics clearance. Ethics committees are constituted in accordance with directives outlined in the South African National Standards document (SANS 10386) and are generally administered by universities or research institutes that employ researchers. As stipulated in SANS 10386, committees are composed of veterinarians, animal researchers, representatives of welfare organisations and lay persons, and are now audited and accredited by the National Health Research Ethics Council (NHREC). However, some organisations that manage land where research is carried out (e.g. South African National Parks) have constituted their own animal use committees and do not accept clearance certificates from other NHREC-accredited committees. Thus, some collaborative research projects may require clearance from several ethics committees even when each is accredited by the NHREC. This has been further compounded by the National Research Foundation which now requires ethics clearance to be in place prior to the release of funds. In the case of student funding, ethical clearance must be in the student's name, leading to further duplication of clearances needed. Because students must register for their degree prior to applying for ethics clearance (which usually takes several months), they may be stranded without funding for an extended time or may even lose their bursaries if they miss deadlines.

In our experience, unjustified delays in the issue of one or two permits may hold up a research project to the extent that other permits, which are usually valid for one year, lapse before work can even begin. Such delays jeopardise research funding because many funding bodies maintain tight funding regimes and monies must be returned if not spent within a funding cycle. Over the last decade, administrative oversight at the various levels of legislation has ballooned to the extent that researchers now spend a significant portion of their research time on legislative compliance. These complicated procedures, inefficiencies, and delays in the issuing of permits often foil research progress.

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As field researchers, we acknowledge the need for regulations relating to the use of South Africa's natural resources for research and other purposes: legislation is necessary to prevent unethical practices, ensure animal welfare, halt the unsustainable harvest of natural resources, check the spread of notifiable diseases, and curb the illicit wildlife trade. But the implementation of the legislation in terms of legitimate research has become problematic because it is applied with a broad brushstroke approach. In essence, hunters, wildlife poachers and bona fide researchers are viewed through the same legislative lens. This inclusive approach supposedly reduces risks to natural resources, but also stops or retards many genuine research activities that are intended to benefit conservation. Moreover, a broad brushstroke approach is not always effective: to circumvent regulations, the illegal wildlife trade has simply moved underground, while bona fide researchers suffer the consequences of these restrictions. Researchers are easily audited because their work is published in the scientific literature, and permit and certificate numbers must be declared as standard practice. The result is that research is impeded, while illegal wildlife traders evade the regulations.

The explosion of red tape hindering research is not limited to South Africa[7,8] and new global agreements such as the Nagoya Protocol regulate commercial research and development internationally. In the case of the Nagoya Protocol, exchange of biological samples is prohibited unless an Access and Benefit Sharing Agreement exists between participating countries.[9,10] Although the stated intention is admirable and aimed at providing indigenous biological resources with much-needed protection from commercial exploitation, the broad brushstroke approach means that bona fide research material, which is not intended for commercialisation, is included in the restrictions, greatly hindering international research collaborations. Commercialisation of biodiscovery has, in any event, been shown to be limited and usually involves widespread organisms which occur across several countries.[8] More than anything else, the Nagoya Protocol is likely to stifle both research and the sustainable commercial use of natural resources through red tape inertia.

Parties to the Convention on Biological Diversity, the umbrella agreement for the Nagoya Protocol, are currently negotiating approaches to enable benefit sharing from the use of the collection of "digital sequence information on genetic resources" (i.e. DNA sequences). Some of the options currently being considered would result in restrictions on the use of digital sequence information, even for basic non-commercial research unless an Access and Benefit Sharing Agreement was in place.[11,12] This would make phylogenetic analyses of taxa that occur across several countries practically impossible. Such phylogenetic studies form the basis of modern-day taxonomy, systematics and the assessment of biodiversity, which in turn provide the foundational data on which conservation biology rests. Without the necessary field work, tissue sampling and sequencing, cryptic species go undetected and the effectiveness of conservation is reduced.

There are also clear examples in South Africa where 'old' legislation has been reinterpreted with disastrous consequences for research. In some cases, researchers in South Africa are now effectively held hostage by bizarre interpretations of legislation. Here, we highlight two examples: Section 20 of the *Animal Diseases Act No. 35 of 1984* (Box 1) and the *Veterinary and Para-Veterinary Professions Act 19, 1982* (Box 2). In our opinion, these Acts are no longer being interpreted or enforced in the spirit with which they were intended, with dire consequences for biological research. We thus appeal to those who oversee, interpret, and implement the laws and legislation in South Africa to moderate their risk averse approach to facilitate and promote biological research. We advocate a return to a more reasonable and fair interpretation of existing legislation so that scientific endeavour is facilitated and promoted, rather than impeded and blocked. Here, we provide recommendations which we believe would facilitate research without reducing the effectiveness of the legislation in the protection of South Africa's natural resources and biodiversity:

- Legislation should be assessed by an independent expert panel with input from researchers and legislators to facilitate rational and fair interpretation that reflects the intended spirit of the legislation. Where appropriate, permitting regulations should include well-defined exemptions for bona fide research conducted by researchers of good standing and affiliated with accredited research institutions.
- Provincial and national permitting bodies should provide blanket research permits to accredited research institutions. Permission for individual research projects should then be devolved to each institution's ethics committee, which rigorously evaluates all research applications (with input from committee members who have a great deal of experience and knowledge in science, animal-based research and veterinary practice). In addition to reducing delays for permitting of research projects, permission issued in this way would also serve to alleviate pressure on provincial permitting authorities, allowing for faster permit application processing by provinces. Threatened or protected species could be excluded from this process, thus allowing provincial authorities to regulate these species more directly.
- Where permits are required for individual research projects, they should be issued for the expected duration of the project – not on an annual basis as is the current norm. Not only will a longer validity reduce administrative burden on researchers and provincial administrators, but it can also be argued that it is unethical and untenable to embark on a research project where there is no guarantee that there will be provincial permission to complete the research.
- Issuing authorities should apply provisions made in NEMBA (Section 92), which states that the relevant authorities should exercise their powers collectively and issue a single integrated permit inclusive of all aspects of the relevant research in a research proposal where appropriate (e.g. including collection, transport, storage, and transfer internationally), instead of multiple separate permits and authorisations. This provision could dramatically streamline the issuing of research permits, but to our knowledge, it has never been applied by permitting authorities.

- Research permits should routinely include provision for the collection of serendipitously discovered biological samples which are important for documenting occurrence of cryptic or rare animals. For example, records of rare reptiles may be discovered as roadkill. Currently, these specimens may not be collected unless specific permits are already in place.
- Permitting procedures should be streamlined. In our experience, turnaround times are far longer than those promised and appear to be due to unwieldy systems and procedures. We are, however, pleased to note that some provinces have addressed this, and in some instances, the permitting process is reasonably efficient and timely.
- Clearance from an NHREC-accredited ethics committee in South Africa should be valid nationally – there should never be a need for multiple ethics clearances for a single research project.
- Universities and national research institutes should support researchers more directly, for example, with the provision of compliance officers familiar with the pertinent legislation to assist with compliance issues. They should also ensure that research and ethics committees are well equipped, functional and provide streamlined procedures to facilitate ethical research.
- The South African Department of Agriculture, Land Reform and Rural Development should compile a list of 'Section 20' exempt taxa, sample types and study types (see Box 1).
- The South African Veterinary Council (SAVC) should streamline the process of authorisation for procedures, identify a list of exempt procedures in consultation with other relevant professional bodies and their constituents, and reassess the requirement of annual renewal of authorisation for researchers who are not registered with SAVC or the Health Professions Council of South Africa (see Box 2). If the intent of the process of authorisation is to ensure that only competent practitioners perform procedures, the requirement for annual renewal makes little sense.

Scientific research is one of the cornerstones of human progress, development and sustainability, and should therefore be promoted and facilitated by legislation. Biodiversity research informs foundational science, conservation and the management of biodiversity.[5] Although legislators and rule-makers may not be trying to overtly restrict research, we believe that a narrow focus on regulations in their area of influence means that the wider implications of the cumulative impact of the excessive burden of all legislation on researchers is not evident to them. Researchers, on the other hand, have to bear the brunt of increasing bureaucracy and managerialism across the board. If research, and consequently conservation of biodiversity, are to be prioritised, we need the red tape cut as a matter of urgency. Furthermore, conversations with academic colleagues in other disciplines suggest that the negative impacts of bureaucracy and managerialism are not limited to biological sciences, or indeed only to science. Similar issues appear to impact several disciplines in the humanities and health sciences.

**Box 1**

The *Animal Diseases Act (No. 35 of 1984)* aims to control the spread of animal diseases and generally promote animal health. In Section 20 of the Act, it is stated that a permit is required 'to perform any research, investigation or experiment of any kind for any purpose with or on any animal or parasite or pathogen or part thereof in any form'. Thus, this section, with its all-encompassing and vague definition of biological material, is aimed at curtailing only activities conducted as part of research, while these same activities can be carried out as long as they are not for research purposes. A 'Section 20 permit' for research is granted only through a very detailed and exhaustive application process that has recently become significantly more onerous, and every individual research project that involves an animal or derivate now requires its own Section 20 permit. The wording in Section 20, taken in isolation, has recently been interpreted by the South African Department of Agriculture, Land Reform and Rural Development (DALRRD) to mean that all animal research requires a permit, even if the potential for spreading disease is virtually nil (i.e. collection of tissue samples immediately placed in ethanol or other preservatives for DNA sequencing). Because the intent of the Act relates to controlling animal disease, logically, Section 20 should not apply to animals or samples that cannot carry diseases that require control. Currently, the DALRRD interpretation of the Act as laid out in their Guidelines for Application for a Permit under Section 20 of the *Animal Diseases Act 1984* (Version 20/1) is a wholesale broad brushstroke approach for all animal research work. As part of this process, research laboratories are required to submit various types of additional documentation regarding laboratory operating procedures and biocontainment even where these research laboratories do not investigate animals that require disease control. This Act predates the advent of routine collection of small tissue samples for DNA sequencing purposes, but the rationale has been applied even to this type of research. Thus, a hunter transporting an entire carcass is not impacted by any Section 20 restriction even though the potential for spread of disease is much greater than the collection of a tiny tissue sample sterilised in ethanol. The current interpretation of the Act would even require a dog owner to apply for a Section 20 permit to take the dog for a walk if the owner was counting its steps as part of a research project.

**Box 2**

The *Veterinary and Para-Veterinary Professions Act, 1982 (Act No. 19 of 1982)* states that only persons registered with the South African Veterinary Council (SAVC) or the Health Professions Council of South Africa (HPCSA) may perform certain procedures on an animal. SAVC has been slow in defining the list of restricted procedures but has recently tabled an exhaustive list of procedures which may only be performed by registered persons (SAVC or HPCSA). Unregistered researchers needing to perform a 'procedure' as part of their research must apply to SAVC for authorisation. This process must be repeated annually, is administratively cumbersome, slow and costly. It has resulted in the need for veterinarians to be available onsite (at significant expense to researchers) to perform even the simplest of procedures (such as injecting an animal or inserting a passive integrated transponder tag) unless the researcher has jumped through the hoops to have their competency evaluated and be authorised by the SAVC to perform the procedure. The requirement for authorisation also means that many procedures can no longer be taught to students in a field setting, impacting the quality and competences of the next generation of researchers. The restrictions imposed by the *Veterinary and Para-Veterinary Professions Act* are especially onerous in a field situation where researchers cannot predict when they are going to need the services of a veterinarian, and this can lead to significant delays and cost implications, or the work being cancelled altogether.

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