

CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA



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REGULATING “BIOENGINEERED” WILDLIFE PRODUCTS UNDER CITES:
INTERPRETING THE PHRASE “READILY RECOGNIZABLE”

This document has been submitted by the United States of America, in relation to agenda item 27 on *Actions to combat wildlife trafficking**

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Regulating “Bioengineered” Wildlife Products under CITES: Interpreting the Phrase “Readily Recognizable” (CoP17 Doc. 27)

The United States has requested a review of relevant CITES provisions, resolutions, and decisions to examine how Parties have applied the phrase “readily recognizable part or derivative” with respect to wildlife products produced from synthetic or cultured DNA. The request comes as several companies and individuals are producing or proposing to produce “bioengineered” products that look, feel, and even test like real wildlife products. These products have also been called “synthetic” or “cultured” wildlife products; however, because the term “bioengineered” encompasses varying technologies and perhaps more accurately describes both the processes used and products developed, this information document uses that term. As this short information document demonstrates, CITES Parties have the legal authority to, and therefore should, regulate these products.

Making Bioengineered Wildlife Products

A few individuals and companies are producing or have declared their intent to produce bioengineered rhino horn. Their goal is to flood the market with bioengineered horn, which they believe could decrease the price for black market rhino horn and, as a result, reduce the incentive to poach rhinos. However, many are concerned that the marketing of bioengineered rhino horn could create a secondary market for rhino horn, as occurred when farmed bear bile was introduced, or actually increase demand for rhino horn and poaching of rhinos by legitimizing the use of rhino horn and undermining effective consumer education efforts. In addition, the marketing of bioengineered rhino horn could exacerbate enforcement difficulties by providing a cover for illegal trade in real rhino horn.

Several processes have been proposed for producing bioengineered rhino horn. One process uses 3D printing technology. This process involves making synthetic rhino DNA using the white rhino genome, which geneticists have already sequenced. The synthesized version of the rhino DNA sequence for keratin—the protein that is the main component of rhino horn—is then inserted into yeast. The yeast multiplies quickly, reproducing significant amounts of rhino keratin. The keratin may then be mixed with other compounds to make the “ink” that is used to print rhino horns. While synthesized rhino DNA is currently used, real rhino DNA could also be used to produce keratin. Thus, whether the final product contains actual or synthetic DNA depends on whether the keratin was produced with actual or synthetic DNA. In either case, basic forensic testing is likely to conclude that 3D-printed horn is identical to actual rhino horn unless specific markers are added to the “ink” that would differentiate this bioengineered product from an actual rhino horn.

An alternative process is to “grow” rhino horns from stem cells. This process starts with an actual rhino stem cell containing actual rhino DNA. The researcher induces the stem cell to generate keratin cells, which can be trained to grow into a rhino horn. As is true of any product produced with stem cell techniques, the product of this process is actual (but lab-grown) rhino horn containing actual rhino DNA.

The promoters of these technologies have indicated that rhino horn is just the first product that they want to produce and market. They have indicated that they will also attempt to produce ivory, pangolin scales, and tiger bone. The question for the CITES Parties is whether trade in these bioengineered wildlife products is covered by CITES.

The Broad Definitions of “Specimen” and “Readily Recognizable Part or Derivative”

CITES requires the issuance of permits for any “specimen” of a species included in the Appendices. Article I(b) of the Convention defines “specimen”, in part, as “any readily recognizable part or derivative” of any listed plant or animal. For greater clarity, the Parties defined “readily recognizable part or derivative” in Resolution Conf. 9.6 (Rev. CoP16) to mean

any specimen which appears from an accompanying document, the packaging or a mark or label, or from any other circumstances, to be a part or derivative of an animal or plant of a species included in the Appendices, unless such part or derivative is specifically exempted from the provisions of the Convention.

This language is broad enough to cover both types of bioengineered wildlife products discussed above.

First, a product originating from a stem cell or that contains actual DNA is clearly a “derivative of any animal or plant.” According to the Oxford English Dictionary, “derivative” means “originating from, based on, or influenced by.” For products grown from stem cells, a part of an animal or plant (i.e., a stem cell) is used to produce wildlife specimens that are lab-grown as opposed to removed directly from the wild. These products clearly “originate from” and are thus a “derivative of” the wild animal. Similarly, products produced through any bioengineering process that uses real DNA of a CITES-listed species are also “derivative of” that CITES-listed species.

Second, the definition of “readily recognizable part or derivative” is also broad enough to cover the bioengineered rhino horn produced using synthetic DNA and 3D printing technology. If a bioengineered wildlife product—whether or not it contains actual or synthetic DNA—looks, feels, and even tests like a specimen of a CITES-listed specimen, then that product would “appear . . . from other circumstances” to be a part or derivative of a CITES-listed species. In this way, the definition of “readily recognizable part or derivative” covers “look-alike” specimens. This interpretation has important enforcement benefits in the same way that listing “look-alike” species does.

Moreover, the Parties have already taken a broad approach to interpreting “readily recognizable part or derivative” to include specimens that “appear[] from an accompanying document” to be a

part or derivative. They have also agreed that this broad interpretation applies “unless such part or derivative is specifically exempted from the provisions of the Convention.” The Parties have expressly exempted urine, feces, ambergris, coral sand, and coral fragments from this definition, but they have not exempted bioengineered wildlife products.

Some may argue that CITES does not or should not apply to bioengineered wildlife products because no animal was removed from the wild or harmed in order to produce the bioengineered products. This misconstrues the scope of CITES, which includes both wild and non-wild specimens of species, such as those specimens that result from captive-breeding, ranching, and artificial propagation.

Conclusion and Recommendation

From a legal perspective, the CITES Parties have clear authority to regulate trade in bioengineered wildlife products. The enforcement concerns posed by trade in such products, especially for those products mimicking specimens of species with extraordinary black market value, should make this an easy choice for CITES Parties. The drafters had the foresight to allow regulation of look-alike species due to enforcement concerns; it makes equally good policy sense to regulate “look-alike specimens,” such as bioengineered rhino horn.

While the Parties already have authority to regulate trade in bioengineered wildlife products, they may wish to revise Resolution Conf. 9.6 (Rev. CoP16) to require Parties to issue permits for trade in bioengineered wildlife products. We recommend the following addition to Resolution Conf. 9.6 (Rev. CoP16):

Agrees also that the term ‘readily recognizable part or derivative’, as used in the Convention, shall be interpreted to include the following:

- (a) products that contain DNA of listed species and are not otherwise expressly exempted under Resolution Conf. 9.6 (Rev. CoP16), and
- (b) products that, although they do not contain actual DNA, appear from a visual, physical, scientific, or forensic examination or test or any other circumstances to be specimens of CITES-listed species.

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