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**DNA Analysis and Sequencing of Seized Rhino Horns and Toenails**

**Presenter Information**

**Shae Burnham**, *Illinois Mathematics and Science Academy* ([https://digitalcommons.imsa.edu/do/search/?q=author\\_inname%3A%22Burnham%22%20author\\_fname%3A%22Shae%22&start=0&context=1630465](https://digitalcommons.imsa.edu/do/search?q=author_inname%3A%22Burnham%22%20author_fname%3A%22Shae%22&start=0&context=1630465))

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**Session Number**

Project ID: BIO 32

**Advisor(s)**

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**Discipline**

Biology

**Start Date**

22-4-2020 9:10 AM

**End Date**

22-4-2020 9:25 AM

**Abstract**

Due to years of excessive hunting and black market-driven poaching, rhinoceros population abundance has declined precipitously since the beginning of the twentieth century. Five extant species of rhinoceros exist today - Sumatran, White (northern and southern subspecies), Black, Indian, and Javan rhinoceros. These species are classified as "Critically Endangered" and are protected in their natural habitats. Rhinoceros horn has been a staple of Traditional Chinese Medicines (TCMs) for centuries, but an increase in demand in Southeast Asia and China has driven the market for goods made from rhinoceros horn. Rhinoceros horns are made of keratin, not unlike hair, fingernails, and toenails. There is no documented medical benefit from the consumption of rhinoceros horn or its derivatives. The aim of this study was to document an accurate list of the species of horns held at the NFWFL, obtaining genetic confirmation for the predicted species, and compiling a database of rhinoceros horns that could be used as references for future forensic analyses. The initial round of DNA analysis identified two samples that were misclassified and confirmed another 63 species identifications, including 4 elephants. Low DNA quantity and quality prevented the analysis of 17 additional samples, which will be analyzed at a later date.

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