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# Animal, Mineral, or Cultural Antiquity The Management and Protection of Paleontological Resources

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# Animal, Mineral, or Cultural Antiquity?: the Management and Protection of Paleontological Resources

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## I. INTRODUCTION

The film Jurassic Park<sup>1</sup> has sparked an interest in dinosaurs and in the field of paleontology.<sup>2</sup> Subsequent to the opening of the film, dinosaur paraphernalia proliferated in the marketplace.<sup>3</sup> Rock shops that sell fossils to the public are popular attractions in many cities.<sup>4</sup> Officials are concerned, however, that incidents of fossil poaching on U.S. public lands are on the rise.<sup>5</sup> For example, in Wyoming, fossil poachers raided the Farson Fish Bed, leaving gaping holes up to seventy feet wide and several feet deep.<sup>6</sup> Public lands are an easy target for fossil poachers because the United States lacks legislation that specifically protects paleontological resources.

Fossil poachers are motivated, in part, by the increasing demand for paleontological specimens in domestic and foreign markets.<sup>7</sup> The profits from the sale of high quality specimens are comparable to profits from smuggling heroin.<sup>8</sup> In Japan, a dinosaur skeleton recently sold for \$7 million.<sup>9</sup>

Recent incidents of fossil smuggling and ownership disputes involving commercial collectors<sup>10</sup> raise questions regarding the way in which the U.S. government should reconcile competing public and private interests. On the one hand, fossils are unique treasures that are not only valuable to the scientific community but should also be preserved for the enjoyment of future generations. On the other hand, fossil-collecting is a hobby enjoyed by many

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1. JURASSIC PARK (Universal Studios 1993).

2. Stefanie Cascio, *Film Prompts Kids To Bone Up On Dinosaurs*, CHI. TRIB., Oct. 5, 1993, at D3.

3. *Id.*; Ruth pe Palileo, *Amber Riding Tide of Popularity Fired by 'Jurassic Park'; But Phony Samples Also Along For Ride*, PHOENIX GAZETTE, July 23, 1993, at B12.

4. pe Palileo, *supra* note 3, at B12.

5. Matt Kohlman, *Fossil Poachers Steal Potentially Valuable Relics From Public Lands*, L.A. TIMES, May 9, 1993, at B3.

6. *Id.*

7. For example, incidents of fossil smuggling from Australia are on the rise. In 1991, fossil poachers stole a 590-630 million year old fossil sea pen—a marine invertebrate—from an Australian national park. Two years later, the fossil surfaced in Japan. Reg Gratton, *How Australian Fossil Smuggling Became Worth Big Bucks*, REUTERS, Apr. 28, 1993, available in LEXIS, Nexis Library, REUTER File.

8. *Id.*

9. Kohlman, *supra* note 5, at B3.

10. *See infra* part II.A.

people. The regulation of fossil-collecting poses a potential threat to the viability of this popular pastime. Heavy regulation of fossil-collecting also threatens the livelihood of private commercial collectors who have a long-standing history of relatively unencumbered access to certain public lands.<sup>11</sup>

Presently, two competing U.S. bills have been proposed to protect paleontological resources: the Vertebrate Paleontological Resources Protection Act ("VPRPA")<sup>12</sup> and the Paleontological Resources Protection Act of 1994 ("PRPA").<sup>13</sup> Both bills protect public interests while satisfying the interests of amateur collectors. The bills propose to deal with the inadequacies of present legislation; however, they differ drastically in their approaches and underlying philosophies.<sup>14</sup>

The fossil trade is fueled by the demand for paleontological specimens in both domestic and foreign markets. Therefore, adequate laws restricting the movement of paleontological objects across national borders are needed. Regulation of fossil collection by the U.S. government is only a local remedy for dealing with increasing incidents of fossil poaching.

The U.S. treatment of paleontological objects differs from the treatment of paleontological objects by other countries. First, many countries include paleontological objects as part of their cultural patrimony and provide special protection to paleontological resources by restricting their export.<sup>15</sup> Second, while the United States regulates the trade of certain cultural antiquities, it lacks import and export laws regulating the trade of paleontological artifacts.<sup>16</sup>

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11. See *infra* part III.

12. OFFICE OF SENATOR BAUCUS, 103d Cong., 1st Sess., DRAFT VERTEBRATE PALEONTOLOGICAL RESOURCES PROTECTION ACT (1993) [hereinafter VPRPA].

13. AMERICAN LANDS ACCESS ASSOCIATION, 103d Cong., 2d Sess., DRAFT PALEONTOLOGICAL RESOURCE PRESERVATION ACT OF 1994 (1994) [hereinafter PRPA].

14. See *infra* part III for a discussion regarding current legislation.

15. See generally LYNDEL V. PROTT & PATRICK J. O'KEEFE, HANDBOOK OF NATIONAL REGULATIONS CONCERNING THE EXPORT OF CULTURAL PROPERTY (1988), (offering a synopsis of relevant legislation). For example, the following countries specifically regulate the export of paleontological objects: Australia, China, Columbia, Indonesia, Iran, Israel, Kenya, New Zealand, and Papua New Guinea. *Id.*

16. See *infra* part VII.B for a discussion regarding U.S. import and export restrictions of cultural objects.

In contrast, fossils in Canada have a dual identity as a natural resource and as cultural property.<sup>17</sup> For instance, several provinces in Canada have enacted strict legislation restricting the collection and ownership of paleontological objects within their territories.<sup>18</sup> In addition, Canada has enacted legislation providing special protection for cultural property, including paleontological specimens. For example, Canadian import and export regulations appear to effectively prevent the exportation of cultural antiquities.<sup>19</sup>

In an effort to address the aforementioned issues, this Comment will examine the relevant laws of the United States and Canada that affect the collection and trade of paleontological objects. Part III will critique current U.S. legislation regulating the collection of fossils on public lands. Parts IV through VI will review three models of natural resource regulation as illustrated by the VPRPA, the PRPA, and the Province of Alberta's Historical Resources Act. Part VI of this Comment will also explore alternative approaches to the regulation of fossil collection on public lands.

Part VII will review the relevant laws affecting the movement of cultural property across national borders. Specifically, this Comment will critique the UNESCO<sup>20</sup> Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property, and will compare the import and export laws of Canada and the United States that affect the commercial trade of fossils.

Part VIII will conclude that the VPRPA's provisions are a better compromise between competing public and private interests. This Comment will further conclude that the United States should adopt some of the provisions of Alberta's Historical Resources Act and the Canadian Cultural Property Import and Export Act.

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17. For example, the Historical Resources Act characterizes "paleontological resources" as "works of nature" and also protects such objects as historical resources. Historical Resources Act, R.S.A., ch. H-8, § 1 (1980)(Can.).

18. See *infra* part V.

19. See *infra* part VII.C for a discussion regarding Canadian import and export regulations.

20. United Nations Educational, Scientific and Cultural Organization.

## II. BACKGROUND

### A. Ownership Disputes on Public Lands

The Jurassic Park craze follows on the tail of some of the most controversial fossil finds in this century. In 1991, a Swiss paleontologist, Hans "Kirby" Siber, discovered an *Allosaurus*, a large carnivorous dinosaur, in Wyoming.<sup>21</sup> The paleontologist thought he was digging on private land but was, in fact, 60 meters short of the private property.<sup>22</sup> The fossil became government property, and Mr. Siber was deprived of the opportunity to sell the specimen for hundreds of thousands of dollars in the open market.<sup>23</sup>

Later that same year, private fossil collectors from the Black Hills Geological Institute discovered a partially exposed *Tyrannosaurus rex* skeleton, nicknamed "Sue,"<sup>24</sup> on a Sioux Indian Reservation in South Dakota.<sup>25</sup> This fossil is the most complete skeleton of a *Tyrannosaurus rex* ever found.<sup>26</sup> The collectors paid the ranch owner \$5000 for the right to excavate the fossil.<sup>27</sup> Yet nearly two years later, federal agents raided the Black Hills Institute and seized the dinosaur.<sup>28</sup> The U.S. government contended that the paleontologists violated the provisions of the Antiquities Act and the fossil was, therefore, federal proper-

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21. *Fossil Hunters; Jurassic National Park*, THE ECONOMIST, Oct. 26, 1991, at 108.

22. *Id.*

23. *Id.* The Fossil was eventually housed at the Museum of the Rockies in Bozeman, Montana. *Id.*

24. Sue is a trademark of the Black Hills Institute of Geological Research, Inc., Hill City, South Dakota.

25. Alison Frankel, *Tyrannosaurus Lex*, AM. LAW., Oct. 26, 1991, at 45.

26. *Id.*

27. *Id.* at 46.

28. *Black Hills Inst. of Geological Research v. United States Dep't of Justice*, 967 F.2d 1237, 1238 (8th Cir. 1992). The government seized the fossil as evidence for an alleged violation of the Antiquities Act. *Id.* See also *infra* Part III for a discussion regarding the provisions of the Antiquities Act.

ty.<sup>29</sup> The Black Hills Institute sought a preliminary injunction for the return of the fossil, but their request was denied.<sup>30</sup>

In a trial on the merits, the district court concluded that the fossil was held in trust by the federal government and voided the sale of the fossil to the Black Hills Institute.<sup>31</sup> Under federal law, Native Americans owning land held in trust by the federal government cannot convey an "interest in land" without first receiving approval from the Secretary of the Interior.<sup>32</sup> The court concluded that the embedded fossil was an "interest in land" according to South Dakota law and was, therefore, subject to the restrictions of federal law.<sup>33</sup> The Black Hills Institute was eventually indicted on thirty-nine charges of trafficking in fossils illegally taken from federal land.<sup>34</sup> The excavation of "Sue," however, was not included in any of the indictments because prosecutors realized that they could not prove that the fossil had been illegally excavated.<sup>35</sup>

Controversial fossil finds are not limited to U.S. public lands. In Australia, an egg of the now extinct giant elephant bird recently sold for \$109,000.<sup>36</sup> A group of children playing in the dunes north of Perth found the fossilized egg.<sup>37</sup> This fossil was a

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29. *Id.* at 1238-39. For a legal analysis of the Black Hills cases, see Patrick Duffy & Lois A. Lofgren, *Jurassic Farce: A Critical Analysis of the Government's Seizure of "Sue™," a Sixty-Five-Million-Year-Old Tyrannosaurus Rex Fossil*, 39 S.D. L. REV. 478 (1994).

30. *Black Hills Inst. of Geological Research v. United States Dep't of Justice*, 978 F.2d 1043 (8th Cir. 1992). Black Hills alleged that the South Dakota School of Mining was not an appropriate repository for the fossil and that housing the fossil at this facility would cause irreparable harm to the fossil. *Id.*

31. *Black Hills Inst. of Geological Research v. United States Dep't of Justice*, 812 F. Supp. 1015, 1020-22 (D.S.D. 1993), *aff'd in part, rev'd in part*, 12 F.3d 737 (8th Cir. 1993) (affirming the lower court's ruling that the fossil was an "interest in the land" rather than personal property), *cert. denied*, 115 S. Ct. 61 (1994).

32. 25 U.S.C. § 483 (1988 & Supp. V 1993).

33. *Id.* For a critique of the court's decision, see Duffy & Lofgren, *supra* note 29, at 501-06 (arguing that "Sue" was personal property and therefore not subject to 25 U.S.C. § 483 (1988 & Supp. V 1993)).

34. Malcolm W. Browne, *Fossil Dealers in Tyrannosaur Seizure are Indicted*, N.Y. TIMES, Nov. 25, 1993, at A17.

35. *Id.*

36. Duncan Graham, *Australia: Young Finders Play Keepings-Off*, REUTERS, Sept. 2, 1993, at 3, available in LEXIS, Nexis Library, REUTERS File.

37. Robert Milliken, *Cousins Win Their Fight For Nest Egg; Children Could Receive Pounds 60,000 After Perth Officials Have Change of Heart Over Find*, THE INDEPENDENT, Sept. 4, 1993, at 8. The egg had a circumference of 31 inches. *Children Win Fight with Government Over Prehistoric Egg*, UNITED PRESS INT'L, Sept. 2, 1993, available in LEXIS,

remarkable find because the egg was laid in Madagascar and floated across the ocean before fossilizing in Australia.<sup>38</sup> Because the egg was found on crown land, it was the property of the State of Western Australia.<sup>39</sup> The state government offered the family a \$17,000 finder's fee, but before the government could take possession of the fossil, the children went back to the dunes where they discovered the egg and reburied it.<sup>40</sup> When the State of Western Australia finally agreed to pay the children \$109,000, the children gave the egg to the government.<sup>41</sup>

This incident is disturbing because the children were, in effect, holding the fossil for ransom. Moreover, the children could easily have forgotten where they buried the egg and a valuable scientific relic could have been lost forever. This incident raises two important issues: (1) who should own property found on government land?, and (2) should governments allow the finders of national treasures to sell such items to the highest bidder?

## B. Competing Private and Public Interests

### 1. Private Interests

Fossils are commercially valuable for several reasons. For example, oil and mining companies take advantage of a fossil's mineral content by using them as indicators of underground stores of minerals and fossil fuels.<sup>42</sup> The primary reason fossils are commercially valuable is because collectors place an aesthetic value on them. For example, fossils have been used as settings for jewelry.<sup>43</sup> In addition, many people collect fossils to display them as works of art.

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Nexis Library, UPI File.

38. *Children Win Fight with Government Over Prehistoric Egg*, *supra* note 37.

39. *Id.*

40. *Id.*

41. *Id.* The price offered by the Australian government was \$7000 more than the amount offered by a Western Australian syndicate. The government paid the children \$17,000 and will pay the remainder of the sum through public donations. *Id.*

42. *Management of Archaeological and Paleontological Resources on Federal Lands, 1985: Hearing Before the Subcomm. on Public Lands, Reserved Water and Resource Conservation of the Senate Comm. on Energy and Natural Resources*, 99th Cong., 1st Sess. 98 (1985) (National Academy of Sciences Revised Draft Report) [hereinafter National Academy of Sciences Report].

43. For example trilobites, an extinct arthropod related to insects and crustaceans, were used in settings for rings, pendants, and brooches. FOSSIL INVERTEBRATES 221 (Richard S. Boardman et al. eds., 1987).



Commercial fossil collecting has its roots in eighteenth century England.<sup>44</sup> Commercial collectors earn their living by collecting fossils and selling them to private individuals and museums. Unfortunately, the latest fossil craze has driven the value of fossils to the point where museums often cannot compete with private collectors' bids.<sup>45</sup> As a result, scientifically valuable specimens are lost to private collections. Regulation of fossil collecting on public lands will no doubt interfere with the pecuniary gain of commercial collectors in the United States.

In contrast, amateur paleontologists often collect fossils for their own intellectual pursuits. By 1985, there were approximately 500,000 amateur paleontologists in the United States.<sup>46</sup> Many amateur paleontologists are quite skilled, and several notable fossils were discovered by amateurs.<sup>47</sup> At present, legislation that allows amateurs to pursue their hobby yet restricts certain collecting activities and access to fossil-rich sites to trained personnel is needed.

## 2. Public Interests

Perhaps a fossil's greatest value is its value to the academic and scientific community. Paleontological evidence helps scientists determine the geographic origins and ancestral relationships of different groups of animals and plants. Fossils are limited resources because they can take millions of years to form and often require a unique set of conditions to make preservation possible.<sup>48</sup> Thus, fossils of rare species or of complete animals are extremely valuable to the scientific community.

Fossils have played an important role in the development and affirmation of major scientific theories. Charles Darwin used paleontological evidence to formulate the theory of natural

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44. In the late eighteenth century and early nineteenth century, fossil-collecting was very popular. For example, Mary Anning and her daughter opened the first fossil shop in England in the early nineteenth century. David B. Norman, *Fossil Collecting and Site Conservation in Britain: Are They Reconcilable?*, 35 *PALAEONTOLOGY* 247, 247 (1992).

45. Michael Milstein, *New Dinosaur Debate is All About Money*, *SAN DIEGO UNION-TRIB.*, Sept. 9, 1992, at C1. For example, a Japanese firm offered a Montana museum \$4 million for a *Tyrannosaurus rex*. *Id.*

46. National Academy of Sciences Report, *supra* note 42, at 98.

47. Greg Retallack, *Fossils are for Everyone*, *NEWSWEEK*, Jan. 11, 1993, at 8. Retallack points out that all six skeletons of the famous *Archaeopteryx* were found by amateurs. *Id.*

48. N. GARY LANE, *LIFE OF THE PAST* 32-41 (2d ed. 1988).

selection, which revolutionized scientific and sociological thought in the nineteenth century.<sup>49</sup> In this century, fossil evidence was instrumental in confirming the theory of continental drift.<sup>50</sup> More importantly, fossil evidence will aid scientists in the development of future scientific theories and will provide answers to current scientific debates regarding mass extinctions, global climate change, and species diversity.

Scientists can reconstruct past climatic conditions by analyzing the species of fossils found at a particular site.<sup>51</sup> A particular assemblage of plants and animals is an indication of the climate that existed in an area during a particular geologic time period. Scientists can use this data to chronicle the history of climatic patterns of the earth.<sup>52</sup> Therefore, in order to adequately study fossil assemblages, entire fossiliferous sites must be preserved.

Fossils are used to predict the future as well as to chronicle the past. Chemical analysis of fossilized marine organisms reveals clues regarding the temperature changes occurring in the sea water while the organism was alive.<sup>53</sup> By documenting historical patterns of temperature change, scientists can develop models of global climate patterns that may aid them in predicting the effect of climatic change in the future. At a time when issues such as the green-house effect<sup>54</sup> and global climate change are on the forefront, the need to preserve fossils and fossil-rich sites is critical.

Extensive and careless excavation of fossils ruins the aesthetic beauty of the surrounding landscape.<sup>55</sup> Not only are "poach-

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49. CHARLES DARWIN, *ON THE ORIGIN OF SPECIES BY THE MEANS OF NATURAL SELECTION, OR THE PRESERVATION OF FAVORED RACES IN THE STRUGGLE FOR LIFE* (Cambridge Univ. Press 1975) (1859). Darwin hypothesized that the succession of forms seen in the fossil record was an indication of a process of selection and modification of traits, which he termed "natural selection." *Id.*

50. The theories of continental drift and plate tectonics are based on the premise that the earth's crust is unstable and the continents have not always had their modern day positions. LANE, *supra* note 48, at 93.

51. *Id.* at 42. For example, in the Pacific Northwest, the assemblage of plant fossils, such as figs, persimmons, and palms, indicate that approximately 40-50 million years ago this area once had a sub-tropical environment. *Id.* at 239.

52. *Id.*

53. *Id.* at 124.

54. The green-house effect "is the gradual warming of the earth as a result of the accumulation of carbon-dioxide and other substances from the atmosphere, which absorb infrared radiation [heat] and slow its escape from the earth." PETER H. RAVEN & GEORGE B. JOHNSON, *BIOLOGY G-10* (2d ed. 1989).

55. Kohlman, *supra* note 5, at B1.

holes" unsightly, but haphazard and extensive excavations can also create erosion problems. Because many fossil-rich areas are located on public lands, fossil poaching interferes with the enjoyment of these areas by other visitors.

Fossils are also enjoyed by people who do not visit federal lands or collect fossils. Institutions, such as universities and natural history museums, facilitate intellectual pursuits and are easily accessible to the average person. Rare fossils sold to private collectors may never be seen by the public or by scientists. Fossil exhibits also generate revenue for museums, which is an economic justification for retaining fossils in their country of origin. In light of the aesthetic, educational, and scientific value of fossils, adequate legislation is needed to preserve these natural resources for the enjoyment of future generations.

### III. LIMITATIONS OF EXISTING U.S. LEGISLATION

The earliest legislation affecting fossil collection on public lands is the Antiquities Act of 1906,<sup>56</sup> which provides statutory authority for the various land management agencies to promulgate regulations.<sup>57</sup> In addition to the Antiquities Act, other statutes such as the Historic Resources Act,<sup>58</sup> the National Landmarks Program,<sup>59</sup> and the National Environmental Policy Act<sup>60</sup> also provide authority to the land management agencies.<sup>61</sup> Presently, the Antiquities Act is the most applicable law governing the collection of fossils on public lands, but this statute suffers from limitations in both its interpretation and application.

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56. Antiquities Act of 1906, Pub. L. No. 59-209, 34 Stat. 225 (codified at 16 U.S.C. §§ 431-433 (1988 & Supp. V 1993)).

57. The relevant land management agencies are: the Bureau of Land Management ("BLM"), the National Park Service ("NPS"), and the U.S. Forest Service ("USFS"). See David Lazerwitz, Note, *Bones of Contention: The Regulation of Paleontological Resources on the Federal Public Lands*, 69 IND. L.J. 601, 609-15 (1994) (presenting a detailed discussion on the regulation of fossil collecting by land management agencies).

58. Historic Sites Act, ch. 593, 49 Stat. 666 (1935) (codified as amended at 16 U.S.C. §§ 461-67 (1988)).

59. The National Historic Preservation Act, Pub. L. No. 89-665, 80 Stat. 915 (1966) (codified as amended at 16 U.S.C. § 470 (1988)).

60. The National Natural Landmarks Program, 36 C.F.R. § 62 (1992).

61. These statutes protect fossil-rich sites rather than the resource itself. For a more detailed discussion of these statutes, see Lazerwitz, *supra* note 57, at 609-15.

### A. The Antiquities Act

The Antiquities Act prohibits the removal or destruction of any "historic or prehistoric ruin or monument, or any object of antiquity."<sup>62</sup> Objects of antiquity may be removed by permit, provided that the excavation is "undertaken for the benefit of reputable museums, universities, colleges, or other recognized scientific or educational institutions."<sup>63</sup>

Whether fossils are protected under the Antiquities Act is questionable. The term "object of antiquity" has been the subject of much dispute. For instance, in *United States v. Diaz*, the defendants removed Native American face masks from a sacred cave in Arizona.<sup>64</sup> The masks in question were made by a medicine man in 1969 or 1970.<sup>65</sup> The Ninth Circuit ruled that the term "objects of antiquity" is unconstitutionally vague.<sup>66</sup> In *United States v. Smyer*, however, the Tenth Circuit ruled that the language contained in the Antiquities Act was not vague when applied to the excavation of an 800 to 900 year old Native American site.<sup>67</sup> The Tenth Circuit distinguished its decision from the Ninth Circuit's ruling in *Diaz* by pointing out that a person of ordinary intelligence would be able to ascertain that excavating a prehistoric Indian burial ground is prohibited.<sup>68</sup>

Although it is obvious that a fossil would qualify as an "antiquity," it is unclear whether Congress intended to cover paleontological objects under this Act. Legal scholars argue that the legislative intent of the Antiquities Act is to protect ancient ruins and archaeological sites.<sup>69</sup> In fact, some scholars argue that

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62. 16 U.S.C. § 433 (1988 & Supp. V 1993).

63. *Id.* § 432 (1988 & Supp. V 1993).

64. *United States v. Diaz*, 499 F.2d 113, 114 (9th Cir. 1974).

65. *Id.*

66. The court noted that the Antiquities Act does not define the term "object of antiquity." *Id.* Because the term "object of antiquity" is not a term of common usage, men and women of common intelligence must guess at its meaning and differ as to its application." *Id.*

67. *United States v. Smyer*, 596 F.2d 939 (10th Cir. 1979). The defendants excavated several bowls from the site and sold the bowls to an archaeologist. *Id.* at 943.

68. *Id.* at 941.

69. See H.R. REP. NO. 2223, 59th Cong., 1st Sess. (1906); S. REP. NO. 3937, 59th Cong., 1st Sess. (1906); Marc Villarreal & Elaine Zacharakis, *Where Did You Dig Up That Old Fossil?: Will Universities Own the Research Specimens That They Collect or Purchase?*, 20 J.C. & U.L. 225, 232-33 (1993).

the Antiquities Act should not be construed to apply to fossils.<sup>70</sup> Nonetheless, in 1908, two years after the enactment of the Antiquities Act, the Bureau of Land Management ("BLM") issued a permit under the authority of the Act to William J. Holland, the Director of the Carnegie Museum, to excavate fossils at a site now known as Dinosaur National Park.<sup>71</sup> Given the conflicting interpretations of the purpose and intent underlying the Antiquities Act, legislation is needed to specifically cover paleontological specimens.

Another problem with current legislation is enforcement by the various land management agencies. First, the implementation of the Antiquities Act has been inconsistent; each land management agency has implemented its own set of regulations.<sup>72</sup> For example, the United States Forest Service ("USFS") requires permits only for the collection of vertebrate fossils on its lands, while the National Park Service ("NPS") requires permits for all forms of fossil collecting.<sup>73</sup> In addition, the USFS allows commercial collecting, whereas the BLM and NPS do not.<sup>74</sup> Thus, collectors must have a working knowledge of the regulations of each land management agency. Clearly, legislation that standardizes the permit systems of the land management agencies is needed. Second, land managers do not consistently enforce the provisions of the Antiquities Act or their own agency regulations.<sup>75</sup> Consequently, fossil poachers have had access to fossil sites on public land.

Finally, the Antiquities Act imposes only minor criminal penalties for the violation of its provisions.<sup>76</sup> As the market value

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70. Duffy & Lofgren, *supra* note 29, at 487-94 (basing their argument on memorandum opinions issued by the Department of the Interior).

71. Richard Stucky, *Dinosaur Future: Loss or Preservation*, DENVER MUSEUM OF NAT. HIST. MUSEUM Q., Summer 1993, at 4.

72. Land management agencies are free to make their own policy decisions regarding the management of paleontological resources. William A. Clemens, *Challenges of Management of Palaeontological Site Resources in the United States*, 40 SPECIAL PAPERS IN PALAEOLOGY 173, 177 (1988).

73. Lazerwitz, *supra* note 57, at 616-26.

74. *Id.*

75. Clemens, *supra* note 72, at 177. See generally SOCIETY OF VERTEBRATE PALEONTOLOGY, OUR NATIONAL HERITAGE FOR SALE (Feb. 1993) (discussing the shortcomings of current legislation).

76. The Antiquities Act states:

Any person who shall appropriate, excavate, injure, or destroy any historic or prehistoric ruin or monument, or any object of antiquity. . . shall, upon

of fossils usually far exceeds the penalties imposed by law, this statute provides little deterrent effect.<sup>77</sup> In addition, critics cite the "inability or unwillingness of federal courts to levy significant fines against convicted poachers."<sup>78</sup> For example, one man, convicted of selling a fossil turtle excavated from a national park, was fined only \$50; the fossil, on the other hand, sold for \$35,000.<sup>79</sup>

### B. *The Archaeological Resources Preservation Act*

Another statute that provides limited protection of fossils is the Archaeological Resources Protection Act of 1979 ("ARPA").<sup>80</sup> This Act was designed to protect archaeological sites, particularly Native American sites, and its goal was to cure some of the inadequacies of the Antiquities Act.<sup>81</sup> This statute imposes heavy sanctions for violators and thus adds a deterrent effect the Antiquities Act lacks.<sup>82</sup> In addition, ARPA prohibits the trafficking of archaeological resources in interstate or foreign commerce that were unlawfully collected from public lands.<sup>83</sup> This provision provides law enforcement persons the statutory basis to prosecute persons who attempt to smuggle illegally excavated artifacts out of the country.

Fossils are protected under the provisions of this Act only if they are found in an "archaeological context."<sup>84</sup> In other words,

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conviction, be fined in a sum of not more than five hundred dollars or be imprisoned for a period of not more than ninety days, or shall suffer both fine and imprisonment, in the discretion of the court.

16 U.S.C. § 433.

77. For example, a dinosaur can sell for millions of dollars in the open market. Milstein, *supra* note 45, at C1. Therefore, the mere possibility of incurring a \$500 fine is unlikely to deter a fossil poacher.

78. SOCIETY OF VERTEBRATE PALEONTOLOGY, *supra* note 75, at 1.

79. Virginia Morell, *Dustup in the Bone Pile: Academics v. Collectors*, 258 SCI. 391, 392 (1992).

80. Archaeological Resources Protection Act of 1979, Pub. L. No. 96-96, 93 Stat. 721 (codified as amended at 16 U.S.C. §§ 470aa-470mm (1988 & Supp. V 1993)).

81. ARPA was intended to cure the vague language of the Antiquities Act. Lorrie D. Northey, *The Archaeological Resources Protection Act of 1979: Protecting Prehistory for the Future*, 6 HARV. ENVTL. L. REV. 61, 71-73 (1982).

82. For example, first time violators will be "fined \$10,000, or imprisonment of not more than a year, or both." 16 U.S.C. § 470ee.

83. *Id.*

84. 16 U.S.C. § 470bb. The statute states, in part: "Nonfossilized and fossilized paleontological specimens, or any portion or piece thereof, shall not be considered archaeological resources, under the regulations under this paragraph, unless found in an

a fossil must be found in direct physical proximity of an archaeological resource.<sup>85</sup> Therefore, this Act has a limited effect because older fossils such as dinosaurs<sup>86</sup> and fossils found outside of archaeological sites are not protected under its provisions. Nonetheless, legislation analogous to ARPA is needed to specifically protect paleontological resources and to impose more substantial penalties than those imposed by the Antiquities Act.

#### IV. PROPOSED U.S. LEGISLATION

A year before the controversy concerning the discovery of "Sue the Tyrannosaurus rex,"<sup>87</sup> the U.S. government and various paleontological groups held meetings to discuss the problem of unauthorized fossil excavations on public lands and the shortcomings of current legislation.<sup>88</sup> One faction, mostly comprised of academic paleontologists,<sup>89</sup> takes the position that the federal government should only allow the collection of vertebrate fossils for educational purposes and not for commercial purposes.<sup>90</sup> Their main argument is that fossils and the information gathered during the course of excavation yield valuable scientific information that is destroyed by careless excavations.<sup>91</sup> The other faction, mostly comprised of commercial and amateur collectors, argues that the U.S. government should allow people to collect fossils on public lands for personal or commercial use.<sup>92</sup> Propo-

archaeological context." *Id.*

85. See 43 C.F.R. § 7.3(a)(4)(i)(1993).

86. Dinosaurs predated humans by hundreds of millions of years and, therefore, it is unlikely that such a fossil would be found in an archaeological site.

87. See *supra* part II.A for a further discussion of this controversy.

88. For example, the BLM conducted a meeting on "Negotiated Rule Making for Collection of Fossils on Federal Lands." *Fossil Vertebrates on Federal Lands*, SOC'Y OF VERTEBRATE PALEONTOLOGY NEWS BULL., Feb. 1990, at 26. The Association of Systematics also held meetings to discuss the potential problems that may impede future legislation. *Vertebrate Fossil Collecting on Federal Lands: Views Aired on Pending Legislation*, 21(2) ASC NEWSL. at 23 (1993).

89. Academic paleontologists study fossils as a profession and work primarily at academic institutions such as universities and museums.

90. *Fossil Vertebrates on Federal Lands*, *supra* note 88, at 26; Michael O. Woodburne, *The Society of Vertebrate Paleontology Perspective*, 38 GEOTIMES 12 (1993).

91. *Fossil Vertebrates on Federal Lands*, *supra* note 88, at 26.

92. See generally BLACK HILLS GEOLOGICAL RESEARCH INSTITUTE, FOSSIL COLLECTING AND PUBLIC POLICY: A REPORT IN SUPPORT OF THE PALEONTOLOGICAL RESOURCES PRESERVATION ACT OF 1993 (1993) [hereinafter Black Hills Report]; Bob Cranston, *What the Amateur Collector Wants to See Accomplished with the A.L.A.A. House Bill*, 38 GEOTIMES 12 (1993).

nents of this view contend that fossil collecting must be encouraged so that fossils are excavated before they are destroyed by the elements.<sup>93</sup> The eventual outcome of these meetings was the development of the VPRPA<sup>94</sup> and the PRPA.<sup>95</sup>

#### A. *The Vertebrate Paleontological Resources Protection Act*

The VPRPA restricts the collection of fossil vertebrates by amateur and commercial collectors. Commercial collectors may excavate fossils on federal land, but they must first obtain a permit from the appropriate land manager, and the expedition must be pursuant to a contract with a public institution.<sup>96</sup> Amateur collectors<sup>97</sup> may conduct surface collections provided that he or she first obtains a permit.<sup>98</sup> An amateur cannot conduct any excavations, however.<sup>99</sup> Any "scientifically significant" vertebrate fossil collected by an amateur must be turned over to the land manager.<sup>100</sup> If the fossil is not of scientific interest, the amateur collector may keep the fossil, but it will be held in trust by the U.S. government, and the fossil must be available to any interested parties for study.<sup>101</sup> In addition, any vertebrate fossil collected

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93. See generally BLACK HILLS REPORT, *supra* note 92.

94. VPRPA, *supra* note 12. A similar version of this bill was originally introduced in the U.S. Senate in 1992, but was not enacted. S. 3107, 102d Cong., 2d Sess. (1992). This Comment is based on a subsequent version of that bill.

95. PRPA, *supra* note 13, 13. At the time of publication, this version of the Act had not yet been introduced to Congress.

96. VPRPA, *supra* note 12, § 9(b).

97. The VPRPA defines an "amateur collector" as

an individual including a member of a school group or other organization that serves children or young adults who pursues the collecting of vertebrate paleontological resources as a hobby but not as a professional or for commercial purposes; collects vertebrate paleontological resources for personal enjoyment, recreation and educational purposes; . . . and is associated with a Federal, State, county, or local institution or public or not-for-profit organization that engages in public education regarding vertebrate paleontological resources.

*Id.* § 4. The term "associated" is not specifically defined in the statute.

98. *Id.* § 9. Surface collection involves the collection of fossils located on the ground's surface. Amateurs may not sell the fossils they collect, however. *Id.* § 10(b).

99. Excavations involve digging, blasting, or drilling in order to remove a fossil. *Id.* § 4. In comparison, surface collection is the removal of an already exposed fossil without significant disturbance of the site.

100. "Scientific significance" is not specifically defined in the Act. The statute states, "the Federal land manager should consult with a vertebrate paleontologist qualified to assess the resource." *Id.* § 10(a).

101. *Id.* § 10(b).



by an amateur on U.S. public lands may not be sold or bartered.<sup>102</sup> All specimens retained by the government are to be housed in an approved repository.<sup>103</sup>

In addition, the VPRPA contains a "grandfather clause" that exempts persons from criminal penalties for wrongful trafficking if the fossil was in the person's *lawful* possession prior to the date of the Act's enactment.<sup>104</sup> ARPA contains a similar provision that has been interpreted to mean that a person who sells or exports an archaeological object that was *unlawfully* collected on public lands prior to the passage of ARPA will still be subject to criminal penalties.<sup>105</sup>

### B. *The Paleontological Resources Preservation Act*

The PRPA will affect vertebrate, invertebrate, and plant fossils.<sup>106</sup> This bill will allow amateurs, commercial collectors, and professionals associated with public institutions to collect fossils on U.S. public lands.<sup>107</sup>

102. VPRPA, *supra* note 12, § 10(b). Compare with the Historical Resources Act, discussed *infra* part VI.A.

103. A suitable repository is:

[A] public or private organization (including a college, university, Federal or State repository or museum) that has established:

i) a fossil collection that is accessioned, catalogued, and maintained in accordance with the standards of the American Association of Museums or the Association of Systematic Collections, or the collection policies of the Federal Land Management agencies . . .

(ii) research or educational programs in the field of vertebrate paleontology; and

(iii) a policy and procedure that permits open access to the collections of the repository, including appropriate records, for the purposes of scientific research and education by persons.

*Id.* § 4.

104. VPRPA, *supra* note 12, § 11(b)(2).

105. Compare with 16 U.S.C. § 470ee (providing a similar "grandfather clause" for the possession of archaeological artifacts before the enactment of the Archaeological Resources Protection Act); Kristine Olson Rogers, *Visigoths Revisited: The Prosecution of Archaeological Resource Thieves, Traffickers and Vandals*, 2 J. ENVL. L. & LITIG. 47, 73 (explaining the legislative intent of the "grandfather clause" in the Archaeological Resources Protection Act).

106. Paleontological resource is defined as "any significant naturally occurring remains, impression or trace of plant or animal life that lived prior to the Holocene epoch." PRPA, *supra* note 13, § 4. The Holocene epoch is the most recent ten thousand years of the earth's history. DOUGLAS FUTUYMA, *EVOLUTIONARY BIOLOGY* 32 (2d ed. 1986).

107. PRPA, *supra* note 13, §§ 2(6), 3(2).

Collectors will not be required to apply for permits for casual use collection,<sup>108</sup> fossils discovered in this manner remain the property of the finder<sup>109</sup> unless the specimen collected is deemed scientifically significant. Scientifically significant specimens must be deposited in a suitable institution, and the finder will receive recognition for his or her discovery.<sup>110</sup>

Land managers may issue commercial permits, so long as the applicant is "qualified to carry out the permitted activity" and reports any scientifically significant find.<sup>111</sup> Under the PRPA, local, state, and national museums have the right of first refusal for scientifically significant specimens.<sup>112</sup> The commercial collector must also deposit the associated paleontological record and data with the United States Geological Survey ("USGS") data bank.<sup>113</sup>

Land managers may issue non-commercial permits provided that the excavation undertaken by the collector is for the purpose of furthering paleontological knowledge in the public interest.<sup>114</sup> If the collector finds a specimen that is later deemed to be scientifically significant,<sup>115</sup> the specimen will become U.S. property.<sup>116</sup> Unlike the bearers of commercial permits, non-commercial permit holders will receive no monetary compensation for significant discoveries.<sup>117</sup>

### C. Comparison Of Proposed Legislation

#### 1. Goals

One fundamental difference between the VPRPA and the PRPA is that the VPRPA protects vertebrate fossils. Scientists are

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108. This term is analogous to the term "surface collection" in the VPRPA. See VPRPA, *supra* note 12, § 9.

109. PRPA, *supra* note 13, § 7(a).

110. *Id.*

111. *Id.* § 6(a). The PRPA does not define the term "qualified."

112. *Id.* § 6(3).

113. *Id.* The purpose of the bank is to maintain a database of paleontological records. The USGS has been compiling records of paleontological data since its founding. John Pojeta, Jr., *Recent Federal Happenings in Paleontology*, 66 J. OF PALEONTOLOGY 702, 702 (1992).

114. PRPA, *supra* note 13, § 6(a)(4).

115. *Id.* § 4.

116. *Id.* § 7.

117. *Id.* § 6.

particularly concerned over vertebrate fossils because complete skeletons are quite rare and require skilled professionals for excavation and preparation.<sup>118</sup> Commonly encountered fossils, such as seashells, and plant impressions are exempt from the provisions of this bill. The PRPA, on the other hand, protects fossils from all taxonomic groups.

The underlying policies of the VPRPA and the PRPA differ with respect to the regulation of fossil collection on public lands. While both bills acknowledge the historical, educational, and scientific value of fossils,<sup>119</sup> the VPRPA emphasizes the role of stewardship in protecting public lands for future generations.<sup>120</sup> In contrast, the PRPA emphasizes the need to expedite the removal of "scientifically significant" fossils before they are lost to the elements.<sup>121</sup> Both bills also acknowledge that fossils are "nonrenewable resources"; however, the PRPA also depicts fossils "as reoccurring resources due to the continuing action of natural erosion."<sup>122</sup>

In light of the PRPA's goal to preserve scientifically significant fossils, its characterization of a fossil as a reoccurring resource is misleading. While it is true that new fossils are constantly in the state of formation within a geologic time frame of millions of years, few quality specimens may be uncovered at any given time. This situation is analogous to the extraction of fossil fuels; only a limited amount can be extracted within a human lifetime. Although there might be a semantic difference between the terms "renewable" and "reoccurring," there is no scientific basis for this distinction. It is more accurate to characterize scientifically valuable specimens as a limited resource rather than as a reoccurring resource.

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118. National Academy of Sciences Report, *supra* note 42, at 89; Stucky, *supra* note 71, at 4.

119. VPRPA, *supra* note 12, § 2; PRPA, *supra* note 13, § 2.

120. VPRPA, *supra* note 12, § 2. The bill states that "each individual who uses Federal lands is exercising both a right and a priceless privilege; and must accept the responsibility of careful stewardship of the lands so that the privilege can be exercised by future generations." *Id.*

121. PRPA, *supra* note 13, § 2. "[S]cientifically significant paleontological resources are increasingly endangered and must be preserved by encouraging their timely collection in order to prevent their destruction by weathering, and other natural causes and pillage." *Id.*

122. *Id.* § 2.

## 2. Collecting Permits

While both the VPRPA and the PRPA attempt to provide amateur collectors access to fossil sites, only the VPRPA requires the issuance of permits for surface collecting by amateurs.<sup>123</sup> In addition, amateurs must be associated with a government institution or public or non-profit organization.<sup>124</sup> The PRPA requires permits for excavations but does not require permits for surface collection. If one views fossils as a non-renewable resource, permits are a reasonable means of regulation. The issuance of permits for fossil collecting is analogous to the issuance of hunting or fishing licenses.

The VPRPA's permit system is not significantly different from the procedures that land management agencies currently follow. The VPRPA merely standardizes the permit procedures between the land management agencies and, thus, eliminates some of the inconsistencies that resulted from the lack of statutory guidelines in the Antiquities Act. More importantly, the VPRPA legitimizes amateurs' rights to collect fossils. Under current regulations, permits are primarily issued to individuals associated with academic, scientific, or governmental institutions.<sup>125</sup>

In addition to requiring permits, the VPRPA limits commercial collecting to persons who are under contract with a public institution.<sup>126</sup> While this provision will result in a drastic decrease in the pecuniary gain by most commercial companies, it will also ensure that only the most competent collectors will conduct excavations on public lands. Museums will not hire companies that do not practice suitable field techniques; consequently, the fossil, the surrounding landscape, and scientific data will be preserved. Commercial collectors will still have the option to collect non-vertebrate fossils on certain public lands or fossils on private land provided that they obtain the landowner's permission.

The PRPA provides for the issuance of commercial permits to qualified persons. This provision is problematic because it does not establish any criteria to determine eligibility for commercial permits. Given that only commercial collectors will be compensat-

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123. VPRPA, *supra* note 12, § 9.

124. *Id.* § 4.

125. See Lazerwitz, *supra* note 57, at 617-20.

126. VPRPA, *supra* note 12, § 9(b).

ed for scientifically significant finds, this provision may lead to an increase in the number of applicants applying for commercial permits, which, in turn, may result in the issuance of permits to inexperienced persons.

### 3. Ownership Rights

The VPRPA and the PRPA also differ with regard to ownership rights to paleontological resources. Under the VPRPA, fossils found on public land are the property of the federal government;<sup>127</sup> whereas under the PRPA, the fossil is the property of the finder unless deemed to be "scientifically significant."<sup>128</sup>

Critics point out that the VPRPA's provision prohibiting ownership of paleontological specimens by amateur collectors will discourage amateurs from actively collecting fossils.<sup>129</sup> A more likely scenario is that amateurs will simply avoid reporting their discoveries to authorities for fear that the government will confiscate their finds. Prohibiting ownership of nonsignificant specimens will, in effect, defeat the VPRPA's goal of preserving rare and scientifically valuable fossils. In addition, it will be administratively cumbersome to keep records of all fossils in the possession of amateur collectors.

The PRPA's provision regarding the right of first refusal for "scientifically significant" fossils is an unrealistic method for addressing the concerns of commercial collectors. Because museum quality specimens are in such great demand, the market value may be beyond the means of a museum or state or local government.<sup>130</sup> Many museums have limited budgets and have been forced to cut staff.<sup>131</sup> Whether taxpayers would be willing to foot the bill for a \$1-million fossil that may have cost only \$10-20,000 to excavate is also questionable. If a museum cannot afford to pay the "fair value" of the fossil, commercial collectors are free to sell the specimen to private collectors. Furthermore, allowing private parties to sell valuable public property at market value would be contrary to the public policy of protecting natural

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127. *Id.* § 10(b)(2).

128. PRPA, *supra* note 13, § 7(a)(2).

129. Lazerwitz, *supra* note 57, at 630.

130. *See* Stucky, *supra* note 71, at 6; Milliken, *supra* note 37. In the elephant bird egg controversy, the Australian government lacked sufficient funds to compete with private collectors. *Id.*

131. *See* Stucky, *supra* note 71, at 6.

resources. The PRPA's "right of first refusal" provision is problematic and will, in fact, lead to the loss of scientifically significant finds made by commercial collectors.

Rather than allow commercial collectors to sell significant specimens to public institutions, a more equitable approach is to compensate commercial collectors for their time and expense for excavating and/or preparing scientifically significant specimens. Another alternative is to purchase specimens based on their scientific value, rather than their market value. For example, according to the regulations promulgated under the ARPA, the "archaeological value" of an object is based on what an "archaeologist would be willing to spend to research and develop the resource, including costs of planning, survey excavation, laboratory analysis, and report preparation."<sup>132</sup>

#### 4. Determination of Scientific Significance

Another difference between the VPRPA and the PRPA is the procedure for determining which fossils are "scientifically significant." Under the VPRPA, the federal land manager "should consult with a vertebrate paleontologist qualified to assess the resource."<sup>133</sup> The bill does not define "qualified paleontologist," however, and it does not establish the criteria a paleontologist must use to assess the fossil.

The PRPA requires a panel of experts to evaluate the scientific significance of a resource.<sup>134</sup> This panel is to be composed of representatives of major paleontological societies, museum associations, educational institutions, and the USGS.<sup>135</sup> "Scientifically significant" is defined as "any resource deemed by a panel of professional paleontologists, selected by the Secretary [of the Interior], and qualified to evaluate the resource, as so rare and of such significance to the scientific community as to require its preservation for study by all."<sup>136</sup>

The PRPA's provisions are more specific than those of the VPRPA and have the advantage of requiring several expert opinions rather than a single opinion to evaluate the fossil's value.

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132. 36 C.F.R. § 296.14 (1993). See also Northey, *supra* note 81, at 84.

133. VPRPA, *supra* note 12, § 11.

134. PRPA, *supra* note 13, § 4(11).

135. *Id.*

136. *Id.*

This method of determining a fossil's value will eliminate the problem of bias when a single expert evaluates the fossil. A minor drawback to this proposal, however, is that a panel of experts can be costly, and the evaluation of a fossil may be a lengthy process. Nonetheless, both bills lack sufficient clarification of the term "scientifically significant."

### 5. Penalties

The VPRPA prohibits the following acts: (1) the unauthorized excavation of fossils without a permit; (2) the sale, purchase, exchange, transport, export, or receipt of a vertebrate fossil that was excavated in violation of U.S. law; (3) wrongful trafficking under state or local law; and (4) false labeling of any vertebrate paleontological resource excavated or removed from federal lands.<sup>137</sup>

The VPRPA imposes strict penalties for violations of any of the above-mentioned acts. First time offenders face penalties of up to \$10,000 and/or up to one year of imprisonment.<sup>138</sup> If the value of a paleontological resource, including costs of recovery, restoration, or repair, exceeds \$500, a violator will be fined \$20,000 and/or imprisoned not more than two years.<sup>139</sup> The maximum penalty is \$100,000 and/or five years imprisonment for subsequent violations.<sup>140</sup> The VPRPA also imposes civil penalties against violators.<sup>141</sup> In addition, the VPRPA prohibits the sale, transport, or exchange of illegally excavated fossils, thus providing officials the statutory authority to prosecute persons who attempt to traffick fossils abroad.<sup>142</sup>

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137. VPRPA, *supra* note 12, § 11.

138. *Id.* § 12.

139. *Id.*

140. *Id.*

141. *Id.* § 13. "A person who violates a prohibition contained in an applicable regulation or permit issued under this Act may be assessed a civil penalty by the Federal land manager." *Id.* The amount of a civil penalty may not exceed an amount "double the cost of recovery, restoration, and repair of each resource and paleontological site that is damaged; and double the fair market value of each resource that is destroyed or not recovered." *Id.*

142. *Id.* § 11. Compare with Archaeological Resources Protection Act, 16 U.S.C. § 470ee(b)(2)(1988) (providing similar provisions). ARPA was the first statute to prohibit the trafficking of archaeological resources taken from U.S. public lands. Rogers, *supra* note 105, at 71-72.

The PRPA imposes no new criminal penalties for its violation; violators will be subject "to penalties of trespass on public land under existing regulations."<sup>143</sup> Violators may be liable "for a civil penalty of not more than \$1000 plus the value of any resource not recovered, for each violation, and after having been given due notice."<sup>144</sup> Subsequent violations will subject the violator to penalties of up to \$2000.<sup>145</sup> The PRPA also prohibits the transport, sale, or exchange of fossils.<sup>146</sup>

The PRPA's civil penalties are not significantly greater than those imposed by the Antiquities Act and likewise provide little deterrence for fossil poachers. More importantly, rare or significant fossils are worth well above the \$1000 penalty, making it more profitable for poachers to risk smuggling fossils in order to sell them on the black market.

In order to be criminally liable under the provisions of the VPRPA a person must "knowingly violate" one its provisions.<sup>147</sup> The language in the section containing this scienter requirement is identical to the language in ARPA.<sup>148</sup> ARPA is a general intent statute, and, as such, the violator simply must have the intent to commit a prohibited act.<sup>149</sup> Absent legislative intent, it is logical to assume that the provisions of the VPRPA would have a similar application as ARPA. Thus, a person can be convicted if he or she collects fossils without a permit or attempts to trade or sell fossils unlawfully collected on U.S. public lands.<sup>150</sup> Additionally, ignorance of the law is not a defense under a general intent statute.<sup>151</sup> Therefore, it is sufficient to show that a person intended to collect fossils on public land. In contrast, a specific intent statute would be unduly burdensome for law enforcement officials because they would be required to demonstrate that a

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143. PRPA, *supra* note 13, § 8(d).

144. *Id.* § 9.

145. *Id.*

146. *Id.* § 8.

147. VPRPA, *supra* 12, § 12.

148. 16 U.S.C. § 470ee.

149. See Northey, *supra* note 81, at 82 (describing the legislative intent of ARPA).

150. VPRPA, *supra* note 12, §§ 11, 12.

151. Compare with 16 U.S.C. § 668(a)(1988) (prohibiting the sale of eagle feathers); *United States v. Allard*, 397 F. Supp. 429, 432 (D. Mont. 1975) (concluding that under a general intent statute such as 16 U.S.C. § 668(a), knowledge of the law is not required for prosecution).



person had the requisite intent to violate the law.<sup>152</sup> Moreover, under such a statutory scheme, a fossil poacher could easily assert the defense that he or she did not intend to violate the law or was not aware of the law.<sup>153</sup>

Critics, however, argue that the VPRPA's provisions are too broad-sweeping and cite the bill's penalty of a \$10,000 fine or one year in prison as an unduly harsh punishment for an unsuspecting adult or child who happens to find a fossil.<sup>154</sup> From a practical viewpoint, this scenario is unlikely to occur. First, land managers have broad discretion and are not required to impose the maximum penalties.<sup>155</sup> The language in this provision is identical to that of ARPA,<sup>156</sup> and the legislative intent behind ARPA's criminal penalties is to prosecute traffickers and dealers rather than the casual visitor.<sup>157</sup> Given that the goals of the VPRPA are similar to ARPA, it is unlikely that innocent parties will receive harsh penalties. A more likely scenario is that the land manager will simply confiscate fossils collected by such individuals. Furthermore, the bill only applies to fossil vertebrates; fossils that are more commonly encountered by the casual visitor, such as trilobites, sea shells, or plant impressions, are not protected by the VPRPA.

#### D. *Scientific Basis for the Dispute*

Given the importance of paleontological resources to the scientific community, the effectiveness of the VPRPA and the PRPA must be evaluated with respect to their impact on science. Scientists have two major concerns: (1) the need to remove fossils before they are destroyed by the elements, and (2) the importance of collecting relevant scientific data from the specimen and the surrounding site.

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152. See Northey, *supra* note 81, at 82 (explaining the disadvantages of specific intent statutes).

153. *Id.* at 82 n.146 (describing the distinction between general intent statutes and specific intent statutes).

154. Retallack, *supra* note 47, at 8.

155. Northey, *supra* note 81, at 82.

156. 16 U.S.C. § 470ee (1988).

157. R. COLLINS, THE MEANING BEHIND ARPA: HOW THE ACT IS MEANT TO WORK 4-6 (July 1980) (U.S.D.A., Forest Service, Southwest Region); S. REP. NO. 179, 96th Cong., 1st Sess. 9 (1979).

Most proponents of the VPRPA are paleontologists who practice in academic settings.<sup>158</sup> Their main concern is the loss of valuable specimens through sales to private collections.<sup>159</sup> Not only is valuable contextual data lost, but the specimen may not be available for scientific study or public viewing. Vertebrate fossils command a high price on the open market, and museums and other academic institutions find it difficult to compete with private collectors.<sup>160</sup> Consequently, fossils excavated by private fossil collectors often end up in private collections.

Opponents of the VPRPA argue that commercial fossil collectors contribute a major proportion of the fossils located in North American museums.<sup>161</sup> This view is refuted by a recent study by the Denver Museum of Natural History, which surveyed thirty-three museums and concluded that only .25 percent of their vertebrate fossils were received through commercial purchases from commercial collectors.<sup>162</sup> Furthermore, most of these fossils were purchased before 1970 when the market value of fossils were still within most museums' means.<sup>163</sup>

It is estimated that fifty commercial outfits exist in the United States.<sup>164</sup> Therefore, it is likely that the VPRPA will threaten the livelihood of many commercial collectors. Considering the amount of U.S. public lands located in fossil rich states<sup>165</sup> and the practice of permitting commercial collection on public lands by land management agencies, these fears are realistic.

Although the VPRPA allows commercial collection for the public's benefit, the revenues generated from such ventures are small when compared to potential profits on the open market. In addition, commercial collectors do not want to be limited to collecting on private land because private landowners often charge

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158. Morell, *supra* note 79, at 391.

159. *Id.* at 392.

160. Stucky, *supra* note 71, at 4.

161. Retallack, *supra* note 47, at 8; Morell, *supra* note 79, at 391.

162. Richard Stucky & Sue Ware, Survey of Collections of Fossils in U.S. Repositories (1991) (unpublished manuscript, on file at the Denver Museum of Natural History).

163. *Id.*

164. James Coates, *The Bone Rustlers*, CALGARY HERALD, Dec. 21, 1991, at C4.

165. For example, the following percentages of U.S. land are federally owned: Arizona, 43.3%; California, 60.9%; Colorado, 34.1%; Idaho, 62.6%; Montana, 27.7%; Nevada, 82.3%; New Mexico, 33.1%. Doug McInnis, *Higher Grazing Fees Have Ranchers Running Scared*, N.Y. TIMES, Sept. 12, 1993, at F5.

fees to collectors for permission to enter their land.<sup>166</sup> Nonetheless, the VPRPA's provisions allowing museums to contract work out to commercial companies will, in fact, promote the collection of scientific data and will provide business opportunities to those companies that practice good field techniques.

Commercial collectors contend that the VPRPA will actually threaten the preservation of fossil vertebrates. Fossils often become exposed to the surface through a process called "weathering."<sup>167</sup> If the exposed fossil is not excavated, it becomes susceptible to the elements, such as wind, rain, and erosion, and suffers irreparable harm.<sup>168</sup> Commercial collectors argue that the prohibition of commercial collection will actually increase the number of fossils lost through weathering because their work accounts for most of the excavation performed each year.<sup>169</sup> They note that, unlike academic paleontologists, who must spend most of the year at their institutions and can devote only a limited field season to the excavation of fossils, they have more time and energy to look for fossils.<sup>170</sup> Therefore, proponents of this view take the position that commercial collection should be encouraged in order to promote the preservation of fossils.

To support their position, commercial collectors cite a study by the National Academy of Sciences that concluded: "the field of paleontology is best served by unimpeded collection and excavation of fossils in order to avoid the problem of weathering."<sup>171</sup> This study, however, was conducted before the sale of fossils became a lucrative business;<sup>172</sup> it is likely that the National Academy of Sciences would reach a different conclusion in light of recent events.

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166. Judy Pasternak, *Monstrous Bones of Contention; The Best Tyrannosaurus Rex Skeleton In History Has Been Discovered. But Do The Activities Of Private Fossil Hunters Like Those who Found 'Sue' Serve The Interests of Science?*, L.A. TIMES, Oct. 2, 1992, at A1. One paleontologist was denied access to a private ranch in order to finish excavating a fossil he had been working on for a year because commercial collectors offered to pay the rancher money. *Id.*

167. BLACK HILLS REPORT, *supra* note 92, at 7.

168. *Id.*

169. Browne, *supra* note 34, at A17.

170. Pasternak, *supra* note 166, at A1.

171. National Academy of Sciences Report, *supra* note 42, at 92.

172. Fossil sales rose sharply in the late 1980s and early 1990s. Morell, *supra* note 79, at 392.

In response to the commercial collectors' argument, the academic paleontologists contend that federal land managers can effectively patrol lands to discover exposed fossils.<sup>173</sup> This assertion, however, is undercut by the fact that land management agencies are often understaffed.<sup>174</sup> The academics also argue that a badly weathered fossil is scientifically more valuable in its surrounding matrix than if it is unearthed and mounted in a showroom without the relevant site data.<sup>175</sup> Moreover, whole skeletons are quite rare, and oftentimes, the data extracted from the isolated fragment is more useful to scientists.

Amateur and commercial fossil collectors also argue that fossils in private collections often end up in museums by donation.<sup>176</sup> A recent survey conducted by the Denver Museum of Natural History indicates that this is an overgeneralization; of the museums surveyed, only six percent of the specimens were donated by amateurs.<sup>177</sup> Furthermore, a fossil may remain in a private collection for generations before it is donated to a museum, if it is ever donated at all.<sup>178</sup> More importantly, donated specimens are of limited scientific value because they are usually unaccompanied by the necessary contextual data.

It is apparent that fossiliferous sites must be preserved to promote the collection of scientific data. While the problem of weathering is a legitimate concern, careless excavation can also destroy a fossil and its surrounding site. Thus, it is important to encourage the timely excavation of fossils *and* collect relevant scientific data. In order to reconcile the differences between commercial collectors and academic paleontologists, *qualified* personnel or *trained* amateurs must have unimpeded access to fossil sites. The VPRPA accomplishes this goal by requiring amateurs and commercial collectors to be associated with a public institution.<sup>179</sup>

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173. SOCIETY OF VERTEBRATE PALEONTOLOGY, *supra* note 75, at 2.

174. Morell, *supra* note 79, at 392.

175. *Id.*

176. Retallack, *supra* note 47, at 8.

177. Stucky & Ware, *supra* note 162.

178. For example, a rare specimen of an *Archaeopteryx* disappeared into a private collection before scientists could study it. Jim Dawson, *Bones of Contention; Dinosaur Hunters Clash Over Motives, Money*, STAR TRIB., Dec. 26, 1993, at B1.

179. VPRPA, *supra* note 12, § 4.

The debate between professional and academic paleontologists is contentious. Despite the long history of cooperation between public institutions and private collectors, the present conflict suggests that a middle ground is difficult to find. Clearly, a regulatory scheme better able to reconcile public and private interests is needed.

#### V. REGULATION OF PALEONTOLOGICAL RESOURCES IN CANADA

Unlike the U.S. regulation of natural resources, the regulation of paleontological resources in Canada is largely determined by the individual provinces rather than the Canadian federal government.<sup>180</sup> The Canadian federal government regulates the National Parks,<sup>181</sup> the First Nations Lands, and the military reserves.<sup>182</sup> People who wish to collect on National Park land or specially protected sites must have collection permits.<sup>183</sup> In these areas, park authorities issue collecting permits to "qualified researchers."<sup>184</sup>

In contrast, regulation at the province level varies greatly. For example, Quebec does not have specific legislation, whereas Alberta has the most extensive legislation.<sup>185</sup> Other provinces, such as British Columbia,<sup>186</sup> Manitoba,<sup>187</sup> and Saskatchewan,<sup>188</sup> have also enacted legislation that provide varying degrees of protection for paleontological resources.

The Province of Alberta has the most comprehensive paleontological legislation in Canada.<sup>189</sup> The enactment of the Historical Resources Act may be attributed to the fact that the

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180. Paul A. Johnston & Andrew Neuman, Panel Discussion: Paleontology on Public Lands, Fifth North American Paleontological Convention (Jun. 28-Jul. 1, 1992) (unpublished transcript, on file with author).

181. See, e.g., Historic Sites and Monuments Act, R.S.C., ch. H-4 (1985) (Can.); National Parks Act, R.S.C., ch. N-14 (1985) (Can.).

182. Johnston & Neumann, *supra* note 180.

183. *Id.*

184. *Id.*

185. *Id.*

186. Heritage Conservation Act, R.S.B.C., ch. 167 (1979) (Can.).

187. Heritage Resources Act, R.S.M., ch. H-39.1 (1985-86) (Can.).

188. Heritage Property Act, ch. H-2.2, 1979-80 S.S. (Can.).

189. Historical Resources Act, R.S.A., ch. H-8 (1980) (Can.).

province contains many important fossil sites<sup>190</sup> and, thus, Alberta had a stronger impetus to develop rigorous legislation.

The Alberta Minister of Community Development issues permits for excavations only to qualified persons.<sup>191</sup> A potential collector must have at least a bachelor's degree in paleontology, be a qualified professional paleontologist, or have a combination of education and experience that is equivalent to the first two requirements.<sup>192</sup> This provision ensures that trained persons conduct excavations and is analogous to the VPRPA's provisions regarding the requirements for amateur collectors.<sup>193</sup> Permits are not required for persons who wish to surface collect.<sup>194</sup>

In contrast to U.S. legislation, which is limited to the protection of paleontological resources on public lands, several Canadian provinces have enacted laws protecting resources on both public and private land. For example, the Historical Resources Act designates all paleontological resources found within the territory as property of the Province of Alberta.<sup>195</sup> This provision covers fossils found on private land, including fossils found above and below the surface of the land after the date of enactment of the Act.<sup>196</sup> Thus, persons who have legally collected fossils either through surface collection or through permitted excavations may retain possession of the fossil, but ownership resides with the province. The Province of Saskatchewan followed Alberta's lead and adopted a similar system of ownership in an effort to preserve its cultural patrimony.<sup>197</sup>

Alberta's Historical Resource Act also expressly forbids the export of any paleontological resource from the Province without permission from the Minister of Community Development.<sup>198</sup> A person who possesses a paleontological resource may apply to the Minister of Community Development in order to acquire title to

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190. John Noble Wilford, *Where The Ground Thundered*, N.Y. TIMES, May 31, 1992, § 5, at 15. Alberta's Dinosaur Provincial Park contains one of the richest dinosaur deposits in the world. *Id.*

191. Historical Resources Act, Paleontological Resources Regulation, Alta. Reg. 77/82 (1982) (Can.).

192. *Id.*

193. VPRPA, *supra* note 12, § 4.

194. *See* Johnston & Neumann, *supra* note 180.

195. Historical Resources Act § 28(1).

196. *Id.* § 28(2).

197. Heritage Property Act § 66(1).

198. Historical Resources Act § 29.

the property.<sup>199</sup> The Minister may grant ownership to the applicant if the resource is listed on the Control List,<sup>200</sup> and the Minister is satisfied that the specimen: "(1) does not have scientific value, (2) is not of sufficient quality for display purposes, or (3) the resource is of a type found in such quantity that it is not required for scientific or display purposes."<sup>201</sup>

In addition, the Minister may allow the exchange of specimens or collections of paleontological resources with a government, museum, institution, non-profit incorporated organization, or person if the Minister considers it to be in the public interest.<sup>202</sup> The Minister may also allow the sale, gift, or lease of a collection of paleontological resources to any of the aforementioned institutions provided that the specimens will be curated, available for scientific study, and on display to the public.<sup>203</sup>

Any violation of the Historical Resources Act can result in a fine of up to \$50,000 and/or imprisonment of up to one year.<sup>204</sup> Unlike current U.S. legislation, the heavy penalty imposed on violators by the province of Alberta is an effective deterrent because the threat of imprisonment or fines presumably outweighs any profit a collector could gain by selling the fossil on the open market.

## VI. ANALYSIS OF FOSSIL COLLECTION LAWS

### A. *Advantages of the Canadian Model of Resource Management*

The Canadian system has several advantages over existing U.S. legislation. First, the Historical Resources Act clearly imposes strict regulations on collectors as well as stiff sanctions on violators. The Historical Resources Act prohibits commercial collectors from collecting vertebrate fossils and limits them to collecting more common fossils, such as ammonites and oyster shells.<sup>205</sup> Unlike the United States, the Province of Alberta has

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199. *Id.* § 28(2).

200. The following items are on the Control List: ammonites, oyster shells, petrified wood, and plant leaf impressions. Alta. Reg. 393/87, Sched. (1987) (Can.).

201. *Id.* § 3.

202. *Id.* § 4.

203. *Id.* §§ 5,6.

204. Historical Resources Act § 48(1).

205. Telephone interview with Andrew Neuman, Curator of Collections at the Royal Tyrrell Museum of Paleontology, Drumheller, Alberta (Aug. 10, 1994). *See also* Alta. Reg.

received few reports of major fossil thefts from the Alberta region,<sup>206</sup> which may indicate the effectiveness of the Historical Resources Act. The United States would benefit from similar legislation imposing harsher penalties than those presently imposed by the Antiquities Act. The provisions of the VPRPA are a positive step in this direction.

Second, Canada has a more centralized system of managing natural resources than the United States and, thus, avoids the complicated regulatory system of the U.S. land management agencies. In Canada, each province is responsible for the disposition of its natural resources and promulgation of its own set of rules and regulations. As a result, each province has a standardized set of rules. In Alberta, for example, only nine percent of the land is managed by the Canadian federal government,<sup>207</sup> and thus the Historical Resources Act would be the controlling statute for most of the fossil resources located in this region.

In the United States, each State is composed of a patchwork of privately-owned land, federally-owned land, state-owned land and, in some cases, Native American land. This situation is complicated by the fact that federal lands are managed by three different agencies, namely the USFS, BLM, and NPS; each agency promulgates its own set of regulations. In addition, the federal government manages a significant portion of the land in most fossil-rich states.<sup>208</sup> Thus, a fossil collector who wishes to collect in the United States must have a working knowledge of each set of regulations and must know which agency manages the land on which he or she wishes to collect. In western states, where there are vast tracts of unmarked, open land, it is difficult to determine whether the land is private or public and, in the case of federal lands, whether the land is managed by the USFS, BLM, or NPS.<sup>209</sup>

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393/87 § 3. The Minister of Community Development has the discretion to grant ownership to persons possessing items on the Control List. *Id.*

206. Neumann, *supra* note 205; telephone interview with Jessica Theodor, Doctoral Candidate of Paleontology at University of California at Berkeley, and editor of PALEOBIOS (Jan. 15, 1994).

207. 1990-1991 ALTA. DEP'T OF FORESTRY, LANDS & WILDLIFE ANN. REP. 15.

208. See McInnis, *supra* note 165, at F5.

209. Malcolm Browne, *Clash on Fossil Sales Shadows a Trade Fair*, N.Y. TIMES, Feb. 15, 1994, at C1. The author cites an extreme case of a commercial collector who uses a Global Positioning System satellite to help him locate the boundaries between private and public lands. *Id.*



Third, provincial ownership of all paleontological resources is a more efficient administrative system than the U.S. system of natural resource management. The Canadian concept of resource ownership differs from the traditional concept of resource ownership in the United States, where private landowners generally have title to the resources located on their land.<sup>210</sup> The Canadian system avoids many of the evidentiary problems encountered in ownership disputes in the United States. By declaring all resources in the province as property of the Crown, the possessor of the fossil must produce the proper certificates proving he or she is entitled to ownership.<sup>211</sup> In contrast, U.S. prosecutors bear the burden of proving that the fossil was actually collected on U.S. public lands and not on private land.<sup>212</sup>

Under current U.S. law, the situs of discovery determines ownership rights. For example, in the case of Hans Kirby Siber, the fossil was public property because he mistakenly missed the boundary from private land by sixty feet.<sup>213</sup> Thus, the U.S. system places the burden on collectors who must not only investigate the title of the property before proceeding with their excavations but also must know the boundaries of the property. In the *Black Hills* case, the land under dispute was held in trust by the U.S. government.<sup>214</sup> Under U.S. law, Native Americans possessing such land could not sell an "interest in the land" without first obtaining permission from the Secretary of the Interior.<sup>215</sup> The laws involved in the *Black Hills* case were so

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210. See Lawrence J. MacDonnell & Sarah F. Bates, *Rethinking Resources: Reflections on a New Generation of Natural Resources Policy and Law*, NATURAL RESOURCES POLICY AND LAW 3, 5-6 (Lawrence J. MacDonnell & Sarah F. Bates eds., 1993).

211. For example, the Heritage Property Act states, "a registration of an object . . . shall, as between the Crown and the person in whose name the object is registered, be proof that the person is the owner of the object." Heritage Property Act, ch. 26, 1993 S.S. § 66(5) (1993) (Can.). The original version of the Act stated, "the onus of proving that the object was not found in or taken from land in Saskatchewan is on the person who alleges that it was not so found or taken." The Heritage Property Act, ch H-2.2, 1979-1980 S.S. § 66(4) (Can.). This provision, however, was repealed in the 1993 amendment to the Act.

212. For example, the prosecutors in the *Black Hills* case dropped the indictment involving "Sue" because they could not prove that the fossil had been illegally excavated. Browne, *supra* note 34, at A17.

213. See *supra* part II.A.

214. *Black Hills Inst. of Geological Research v. United States Dep't of Justice*, 812 F.3d 737, 741-42 (8th Cir. 1994), *cert. denied*, 115 S. Ct. 61 (1994).

215. *Id.*

complicated that the average person would have been unable to determine whether the fossil was owned by the Native American or held in trust by the U.S. government, and the issue of ownership had to be settled by the court.<sup>216</sup> From the perspective of fossil collectors, the complex system of public land management in the United States can be daunting.

With regard to the preservation of natural resources, the Canadian system avoids many of the pitfalls of the U.S. system. Because the United States has more extensive laws restraining the government from invading the property rights of private landowners, the Canadian system of resource ownership may not be a viable option.<sup>217</sup> Nonetheless, the United States could enact legislation similar to Canadian legislation. For example, the United States could adopt provisions imposing harsher penalties for violators. In addition, the United States must change its current scheme of land management by creating a uniform standard of regulations between land management agencies.

#### *B. Alternative Approaches to Proposed U.S. Legislation*

The VPRPA would benefit from several of the following modifications: (1) lessening the restrictions for issuing permits to amateur collectors, (2) including provisions that allow private collectors to acquire title to more common varieties of fossils, and (3) clarifying the term "scientific significance."

The main legal issues at stake are: (1) how to regulate the collection of fossils in order to extract the maximum amount of scientific data, and (2) who should have legal title to specimens discovered on public lands? Therefore, provisions that facilitate collection by qualified persons and increase the likelihood that such persons will report significant finds are needed.

The VPRPA accomplishes the goal of ensuring that fossil sites are excavated by qualified individuals by requiring amateurs to be affiliated with a public institution. This requirement is essential for

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216. *Id.* The legal question at issue was whether the fossil was an "interest in the land" or personal property.

217. See generally Frank Michelman, *Takings*, 1987, 88 COLUM. L. REV. 1600 (1988). But see T. Nicolaus Tideman, *Takings, Moral Evolution, And Justice*, 88 COLUM. L. REV. 1714 (1988); Patricia A. Hageman, *Fifth Amendment Takings Issues Raised By Section 9 of the Endangered Species Act*, 9 J. LAND USE & ENVTL. L. 375 (1994) (arguing that government regulation of natural resources should not be subject to the takings clause of the Fifth Amendment of the U.S. Constitution).

expeditions involving excavations, which require greater skill and care to avoid damage to the fossil. The VPRPA's requirements for amateurs are somewhat restrictive for surface collections, however, because surface collections do not involve the defacement of the surrounding landscape. Therefore, waiving the requirement of being affiliated with a public institution for individuals who wish to conduct surface collection is an alternative.

The VPRPA's provision prohibiting the ownership of nonsignificant fossils by amateur collectors will be administratively cumbersome and will require land management agencies to keep track of all specimens possessed by amateurs. A more logical and administratively efficient option is to declare that all paleontological resources found on U.S. public lands are property of the U.S. government. The government can then transfer ownership of fossils that are common or nonsignificant on a case-by-case basis. This proposal is a modification of the Canadian approach whereby all paleontological resources are property of the province and title is transferred to applicants by the Minister of Community Development.<sup>218</sup> This alternative would require less record-keeping and, as a result, would ease the administrative burdens on the land management agencies.

In addition, the interests of science would be best served if amateurs could retain title to nonsignificant fossil finds. Amateurs could report the location of the discovery to the land management agency and, thus, scientists would have information regarding the location of potential fossil beds. This alternative proposal would facilitate the intellectual pursuits of hobbyists, yet it would also encourage the collection and preservation of scientifically valuable fossils and fossil sites. If amateurs can retain ownership of some of their finds, it would increase the likelihood that they will report their discoveries to the appropriate land manager.

Another alternative is a modification of the VPRPA's provision requiring commercial collectors to work under contract with public institutions. Such a provision would allow commercial collectors to retain paleontological specimens that have been rejected by the public institution that hired them. Ostensibly, such specimens would be common or sufficiently represented in existing

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218. For example, the provinces of Alberta and Saskatchewan allow the transfer of title to private citizens. See *Historical Resources Act*, R.S.A., ch. H-8, § 29 (1973) (Can.); *Heritage Property Act*, ch. H-2.2, 1979-1980 S.S. § 66.2 (Can.).

collections. The Secretary of the Interior or land management agency could grant ownership of such specimens to commercial collectors who would then be free to sell them to the public or export them abroad. Commercial collectors would be prohibited from exporting or selling vertebrate fossils taken from public lands unless accompanied with the proper certificates.

Another problematic issue is the definition of "scientific significance." Neither the VPRPA nor the PRPA provides a precise definition of this term. Consequently, this determination will be left to the discretion of the individual land management agencies. The lack of clarification of the term "scientific significance" will result in a disparate treatment of paleontological resources by land managers from the various land management agencies who may employ varying standards of evaluation. Legislation establishing more specific standards of scientific significance is needed.

Rareness or uniqueness is only one of several criteria that justify the preservation of a particular specimen. A paleontological resource is scientifically significant if it supports or refutes current scientific theories or adds information to current knowledge about particular groups of organisms. In its report to the Senate Subcommittee on Public Lands, Reserved Water and Resource Conservation, the National Academy of Sciences outlined the following criteria for determining the scientific significance of a paleontological specimen: (1) rareness or uniqueness of the specimen, (2) whether the specimen adds information to paleobiographic or biostratigraphic distributions, (3) whether the specimen provides insight into paleoecology and taphonomy, and (4) whether there is preservation of the organism's soft parts.<sup>219</sup>

The province of Alberta takes another approach by emphasizing the need to preserve fossils for scientific purposes *and* for display purposes. For example, legislation protecting historical resources includes the following criteria to determine whether a paleontological resource should be retained by the Crown: (1) its scientific value, and (2) whether there is sufficient quantity for display purposes or if the resource is of a type found in such quantity that it is not required for scientific or display purposes.<sup>220</sup>

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219. National Academy of Sciences Report, *supra* note 42, at 105.

220. Alta. Reg. 393/87 § 3.

An enumeration of criteria, such as those listed above, would provide land managers the necessary guidelines, yet the terms are broad enough to provide land managers with enough discretion such that significant objects will not be inadvertently excluded. Both the VPRPA and the PRPA would benefit from the inclusion of some of the criteria proposed by the National Academy of Sciences and the Historical Resources Act.

## VII. THE INTERNATIONAL TRADE OF FOSSILS

Fossil smuggling in the United States is fueled by the demand for fossils by foreign buyers. For example, the Europeans and the Japanese are avid fossil collectors<sup>221</sup> and can afford to pay top dollar for a rare specimen.<sup>222</sup> The United States is a rich source of fossil specimens and a buyer of fossils from other countries. Thus, the United States is both vulnerable to fossil poaching and an active market participant.<sup>223</sup>

Countries that are either politically unstable or economically stressed are also vulnerable to the activities of fossil poachers.<sup>224</sup> For example, at a recent mineral and fossil show here in the United States, a rare fossil amphibian from Russia was for sale with a certificate allowing its export.<sup>225</sup>

Additionally, there have been numerous reports of thefts of priceless specimens from museums.<sup>226</sup> Conversely, there are also

221. Morell, *supra* note 79, at 391 (1992). See also *Fossil Hunters; Jurassic National Park*, *supra* note 21, at 108 (describing the activities of Hans Siber who collects fossils in the United States in order to sell them on the open market).

222. *Id.*

223. For example, commercial collectors are marketing Chinese dinosaur eggs valued at \$1000-\$3000 a piece in the United States. *Dinosaur Egg Bonanza Floods U.S. Market*, 261 *SCIENCE* 679 (Faye Flam ed., 1993).

224. For example, the economic conditions in Russia make fossil hunting a lucrative business. In addition, the unstable political climate prevents the government from strictly enforcing its export regulations. Electronic-Mail communication from Ben Wagonner, Doctoral Student from the Museum of Paleontology at the University of California, at Berkeley, to Dorna Sakurai (Nov. 1, 1993) (on file with author) (Ben Wagonner was in Russia during the Fall of 1993 conducting research at the Paleontology Institute of the Russian Academy of Sciences). In Russia, fossil mammoth teeth were sold for \$90 on the open market. *Id.*

225. Browne, *supra* note 209, at C1.

226. In Russia, several valuable specimens of fossil amphibians were stolen from the Paleontological Museum of the Russian Academy of Sciences. Mikhail A. Shishkin, *Russian Triassic Amphibians Stolen*, 25 *LETHAIA* 360, 360 (1992). In Malta, thieves stole the skull of a neolithic human child and elephant tusks of the now extinct pygmy elephant. Letter from Dr. George Zammit Maempel, Curator of the Malta Natural History Museum

incidents where museums have illegally housed cultural artifacts belonging to other countries.<sup>227</sup> Thus, museums must have the means to repatriate stolen items.

### A. The UNESCO Convention

Several international legal instruments categorize fossils as cultural antiquities or objects of cultural or scientific interest.<sup>228</sup> The most significant international treaty affecting the movement of cultural objects across national borders is the UNESCO Convention.<sup>229</sup> The primary goal of the UNESCO Convention is to prohibit and deter the export of illegally obtained cultural property through international cooperation.<sup>230</sup> Specifically, the UNESCO Convention attempts to "protect the cultural property existing within [the member state's] territory against the dangers of theft, clandestine excavation, and illicit export."<sup>231</sup> The treaty defines cultural property as "property which, on religious or secular grounds, is specifically designated by each state as being of importance for archaeology, prehistory, history, literature, art or science."<sup>232</sup>

In order to achieve the goals set forth by the UNESCO treaty, the cooperating member states must implement laws that protect cultural property within their own territories to "secure the protection of the cultural heritage" and to prevent illicit export of important cultural property.<sup>233</sup> Each member state must adopt a system whereby all exported cultural property must be accompa-

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to Dr. Alan Keimig, Department Associate at the Denver Museum of Natural History (Jan. 15, 1993) (on file with the author). The fossils were stolen in 1980, and to this date, there has been no sign of the stolen specimens. *Id.*

227. For many years, the British Museum refused to return a skull of *Proconsul africanus*, an early hominid, although the skull was on long term loan from Kenya. The British Museum insisted that the fossil was a gift. JEANETTE GREENFIELD, *THE RETURN OF CULTURAL TREASURES* 270 (1989).

228. For a comparative study of international treaties which protect cultural property, see Joseph F. Edwards, *Major Global Treaties for the Protection and Enjoyment of Art and Cultural Objects*, 22 *TOLEDO L. REV.* 919 (1991).

229. Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property, Nov. 14, 1970, art. I, 96 Stat. 2351, 823 U.N.T.S. 231 (1972), reprinted in 10 *I.L.M.* 289 (1971) [hereinafter UNESCO Convention].

230. *Id.* The UNESCO Convention defines "objects of paleontological interest" as cultural property. *Id.*

231. *Id.*

232. *Id.* art. 1.

233. *Id.* art. 5.

nied by an authorization certificate.<sup>234</sup> The treaty also contains provisions that prevent museums from obtaining material that was illegally exported from another member State<sup>235</sup> and provides a mechanism for the repatriation of illegally exported objects.<sup>236</sup>

The UNESCO Convention, however, has several limitations. First, the treaty is not self-implementing; each member state must enact its own supporting legislation.<sup>237</sup> Problems arise when the nation's domestic legislation does not correspond with the treaty's definition of cultural property.<sup>238</sup> For example, paleontological specimens are included in the definition of cultural property under the UNESCO Convention, but the U.S. legislation implementing the UNESCO Convention is limited to archaeological and ethnological objects.<sup>239</sup>

Second, the UNESCO Convention is a bilateral treaty; in order for the provisions to apply, both the market and the source nation must be parties to the treaty.<sup>240</sup> Therefore, if a cultural object is smuggled into a country that is not a party to the treaty, there is no recourse unless the country has independently enacted domestic legislation prohibiting the import of the object in question. Thus, a conflict occurs when the market nation is not a signatory of the treaty.<sup>241</sup> Critics note that the provisions of the Convention are ineffective because they lack a concrete mechanism for resolving disputes between member states.<sup>242</sup>

Third, and perhaps most important, the repatriation of stolen cultural property is limited to objects stolen from a museum, or a

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234. *Id.* art. 6.

235. *Id.* art. 7.

236. *Id.* art. 13.

237. GREENFIELD, *supra* note 227, at 258.

238. *Id.*

239. *See infra* part VII.B.

240. *See* GREENFIELD, *supra* note 227, at 258.

241. For example, Switzerland, Germany, the United Kingdom, and France have not ratified the treaty. John P. Shin, *A New World Order for Cultural Property: Addressing the Failure of International and Domestic Regulation of the International Art Market*, 34 SANTA CLARA L. REV. 977, 982 (1994). The aforementioned countries are also leading market countries for cultural artifacts. GREENFIELD, *supra* note 227, at 237.

242. *Id.* As the parties to the UNESCO Convention are members of the United Nations, disputes could be handled by the International Court of Justice. This judicial body, however, lacks the means to enforce its judgments. *Id.* at 260. *See also* Karen Theresa Burke, Note, *International Transfers of Stolen Cultural Property: Should Thieves Continue to Benefit From Domestic Laws Favoring Bona Fide Purchasers?*, 13 LOY. INT'L & COMP. L.J. 427, 438-39 (1990) (discussing the limitations of the UNESCO Convention).

religious, or secular public monument.<sup>243</sup> In addition, the stolen item must have been documented or accessioned.<sup>244</sup> Therefore, objects stolen from public lands, for example, cannot be recovered under this provision because they would not have been identified and numbered by a museum or other public institution. The advantage of Article 7(b) of the UNESCO Convention is that once an item has been accessioned by a museum, for example, it can be readily identified if exported illegally, thus facilitating its repatriation.<sup>245</sup>

The effectiveness of the UNESCO Convention is largely dependent on the effectiveness of the implementing legislation of the member states. Inconsistencies arise when member states do not apply the identical provisions of the treaty or enact different procedures to enforce them. With regard to the fossil trade, the UNESCO Convention is limited because of the lack of participation by many nations and the lack of procedural mechanisms facilitating the repatriation of stolen objects. In addition, article 7(b) of the Convention does not provide protection for clandestine excavations of fossils. As such, regulation of the trade of paleontological specimens must be enforced at the national level through import and export regulations.

### B. U.S. Import and Export Regulations

The United States does not have specific legislation barring the import or export of paleontological objects. The only statutes barring the import of cultural property are the Importation of Pre-Columbian Monumental or Architectural Sculpture or Murals,<sup>246</sup> and the Cultural Property Implementation Act ("CPIA"), but these statutes are limited to archaeological and/or ethnological material.<sup>247</sup> The only U.S. statute barring the export of cultural

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243. UNESCO Convention, *supra* note 229, art. 7(b).

244. *Id.* See also PAUL M. BATOR, THE INTERNATIONAL TRADE IN ART 99 (1983) (providing an analysis of article 7(b)).

245. *Id.*

246. Pub. L. No. 92-587, 88 Stat. 1296, 1297-98 (codified at 19 U.S.C. §§ 2091-2095 (1988 & Supp. V 1993)). This law was enacted after the United States and Mexico signed a treaty in which the United States agreed to assist Mexico in its effort to repatriate stolen pre-Columbian property. At the time this law was enacted, the United States was a major market for pre-Columbian artifacts. GREENFIELD, *supra* note 227, at 189.

247. Convention on Cultural Property Implementation Act, 19 U.S.C. §§ 2601-2613 (1988).



property is ARPA,<sup>248</sup> but, again, paleontological objects are generally not covered under this statute. The omission of paleontological objects from existing U.S. statutes is particularly noteworthy because, unlike the United States, most countries have more comprehensive legislation limiting the export of cultural property or antiquities.<sup>249</sup>

The lack of legislation regulating the import and export of paleontological objects allows smugglers to easily transport fossils in and out of the United States. The United States is the largest market country for cultural antiquities.<sup>250</sup> For example, in 1993, the discovery of over 1000 dinosaur eggs in China led to a proliferation of these fossils in the U.S. market.<sup>251</sup> Moreover, countries or states that have laws favoring bona fide purchasers often promote the "laundering" of cultural objects.<sup>252</sup>

Although the United States has legislation implementing the provisions of the UNESCO Convention,<sup>253</sup> the statute does not require export certificates for paleontological specimens. Unlike the UNESCO Convention, which affects all cultural property including paleontological specimens,<sup>254</sup> the CPIA requires export certificates for only archaeological and ethnological materials.<sup>255</sup> Paleontological objects do not fall squarely into these categories and, therefore, would not be fully protected by this provision. Paleontological objects, however, receive limited protection under the CPIA's provision regarding stolen cultural property.<sup>256</sup> This section provides for the repatriation of objects stolen from a museum, or a religious, or secular public monument and coincides

248. 16 U.S.C. § 470ee (1988).

249. BATOR, *supra* note 244, at 58. See generally PROTT & O'KEEFE, *supra* note 15.

250. GREENFIELD, *supra* note 227, at 237. The author also cites Germany, Switzerland, France, England, and Hong Kong as leading black market countries. *Id.*

251. *Dinosaur Egg Bonanza Floods U.S. Market*, *supra* note 223, at 679.

252. Burke, *supra* note 242, at 457.

253. 19 U.S.C. §§ 2601-2613.

254. UNESCO Convention, *supra* note 229, art. I.

255. 19 U.S.C. § 2606. Section 2601 states:

No object may be considered to be an object of archaeological interest unless such object— 1) is of cultural significance; 2) is at least two hundred and fifty years old; and 3) was normally discovered as a result of scientific excavation, clandestine or accidental digging, or exploration on land or under water.

*Id.* § 2601.

256. *Id.* § 2607. Unlike the provisions regarding export certificates, section 2607 embraces the same scope of cultural property covered by the UNESCO treaty.

with Article 7(b) of the UNESCO Convention.<sup>257</sup> This statute suffers from the same limitations as article 7(b), however, and provides little protection for fossils excavated from public lands.<sup>258</sup>

Nonetheless, legal remedies are available when an artifact is stolen from a rightful owner. For example, the National Stolen Property Act ("NSPA")<sup>259</sup> is a criminal statute that law enforcement officials use to prevent the import of stolen objects.<sup>260</sup> Under the provisions of this statute, the government must demonstrate the following: (1) the goods were in fact stolen, and (2) the persons attempting to import the goods knew that the goods were stolen.<sup>261</sup> Illegal exportation, however, is not sufficient to constitute theft; a country must make a declaration of national ownership in order to prosecute smugglers under the NSPA.<sup>262</sup>

### C. Canadian Import and Export Regulations

In Canada, the federal government controls the export of fossils from Canadian territory. For example, paleontological resources are listed in the Canadian Cultural Property Control List and are, therefore, subject to export control.<sup>263</sup> If a person wishes to export an item that is listed on the control list, an expert examiner must determine: (1) "whether the object is of outstanding significance by reason of its close association with Canadian history or national life, its aesthetic qualities, or its value in the study of the arts or sciences;" and (2) "whether the object is of such a degree of national importance that its loss to Canada would significantly diminish the national heritage."<sup>264</sup>

If the examiner determines that the fossil is of particular scientific, historical, or educational value, the authorities will not

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257. UNESCO Convention, *supra* note 229, art. 7(b).

258. See *supra* part VII.A for a discussion regarding the limitations of article 7(b).

259. National Stolen Property Act, 18 U.S.C. §§ 2314-315 (1988 & Supp. V 1993).

260. See *United States v. McClain*, 545 F.2d 988 (5th Cir. 1977) (applying the NSPA).

261. GREENFIELD, *supra* note 227, at 196.

262. *Id.* at 197.

263. Cultural Property Export and Import Act, R.S.C., ch. C-51, § 4 (1974) (Can.). The control list includes "objects of any value that are of archaeological, prehistorical, historical, artistic or scientific interest and that have been recovered from the soil of Canada." *Id.*

264. *Id.* § 11.

issue a permit.<sup>265</sup> If an export permit is denied, the applicant must wait a period of two years from the date of refusal before he or she is eligible to reapply.<sup>266</sup> During the first six months of this waiting period, a Canadian "institution or public authority"<sup>267</sup> can make an offer to purchase the object from the applicant for a "fair cash offer."<sup>268</sup>

The objective of the Cultural Property Export and Import Act is to encourage exporters to sell the cultural artifact to a Canadian institution rather than wait two years before selling to a foreign buyer. Canada attempts to keep its cultural property within its borders by promoting a domestic market for its artifacts.<sup>269</sup> Thus, Canada has adopted a system of selective export control under which items of special significance may not leave the country.<sup>270</sup> By allowing the export of less significant items, there is less incentive to participate in black market trade.<sup>271</sup>

Critics further question whether the Canadian export regulations actually deter the export of valuable cultural property because of the high demand for these items abroad. If the demand for fossils from foreign countries is great, the market price may be beyond the means of domestic museums. Paleontologists argue that the Canadian export laws are ineffective due to the inflation of market prices for paleontological specimens.<sup>272</sup> As a result, the only impact the regulation has on the exporter is a delay of two years.

Nevertheless, experts note that the English and Japanese counterparts to the Canadian model of export control have been fairly successful in deterring the illicit trade of cultural artifacts.<sup>273</sup> Moreover, the Canadian model is more favorable than

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265. *Id.*

266. *Id.* § 16.

267. An institution must be a publicly owned institution that is "established for educational or cultural purposes" and "conserves objects and exhibits them or otherwise makes them available to the public." *Id.* § 2.

268. *Id.* §§ 29, 30. "Fair cash offer" is not defined by the statute.

269. See BATOR, *supra* note 244, at 43-46 (discussing the advantages of this system).

270. *Id.* at 37-40.

271. *Id.* at 45-46. The creation of a domestic market in this manner has been successful in England and Japan. *Id.*

272. Johnston & Neumann, *supra* note 180.

273. BATOR, *supra* note 244, at 45-46.

an absolute ban on the export of fossils, which may result in a proliferation of fossils in the black market.<sup>274</sup>

The Canadian Cultural Property Export and Import Act is also Canada's implementing legislation for the UNESCO Convention.<sup>275</sup> Unlike the United States, Canada bans the importation of property that is exported illegally from the country of origin.<sup>276</sup> Canada adopts the "blank check" rule whereby the export regulations of the country of origin govern the customs regulations of the market country.<sup>277</sup> For example, if a country bans the export of paleontological material, Canada will honor that country's export laws by prohibiting its import. A country claiming ownership of an artifact does not have to make a formal declaration of ownership to trigger the implementation of the Cultural Property Act; a simple request is sufficient.<sup>278</sup> Unlike the United States, Canada takes a more cooperative approach by honoring the protective laws of other countries.

#### *D. Advantages of the Canadian Model of Import and Export Restrictions*

A country can adopt a variety of measures to deter the export of cultural property.<sup>279</sup> For example, a country can declare a total ban on the export of cultural artifacts.<sup>280</sup> A total ban is usually ineffective, however, because this method will generally stimulate trade in the black market.<sup>281</sup> In addition, a total ban is administratively unenforceable due to its overbroad restriction on cultural items.<sup>282</sup>

The Canadian system has several advantages. First, a potential smuggler must confront a battery of strict domestic regulations such as Alberta's Historical Resources Act and federal export controls. Second, Canada attempts to cultivate a domestic

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274. *Id.* at 42.

275. GREENFIELD, *supra* note 227, at 210.

276. Cultural Property Export and Import Act § 37(2).

277. *See* BATOR, *supra* note 244, at 51-54 (discussing blank check controls).

278. GREENFIELD, *supra* note 227, at 211. *Compare with* the National Stolen Property Act, 18 U.S.C. §§ 2314-2315 (1988 & Supp. V 1993). *See also supra* part VII.B for a discussion regarding the requirements of the NSPA.

279. *See generally* BATOR, *supra* note 244.

280. This strategy has been adopted by Russia and China in an attempt to protect movable cultural property. *Id.* at 39.

281. *Id.* at 42.

282. *Id.*

market in order to keep cultural property within its borders. Nevertheless, Canada's provision requiring public institutions to pay the market value for significant specimens is problematic as market values are often beyond a museum's means.

Existing land use regulations in the United States as exemplified by the Antiquities Act and non-existent export regulations, may actually facilitate the black market trade in fossils. Even if the VPRPA or the PRPA is passed by Congress, the United States lacks specific regulations to prevent the export of scientifically valuable fossils. Although the VPRPA and the PRPA prohibit the transport, sale, or exchange of fossils illegally obtained from public lands, U.S. officials must prove that the fossil was excavated from public lands. Unless there is circumstantial evidence establishing the origin of the fossil,<sup>283</sup> it will be difficult to prove that the fossil was, in fact, taken from public, and not private land.

The United States could adopt export regulations based on the Canadian model. For example, the United States could adopt regulations that prohibit the export of paleontological objects unless they are accompanied by an export permit. An official could deny export permits for objects deemed to be scientifically significant. This solution would circumvent the need to establish the fossil's situs of discovery.

Rather than adopting the Canadian approach of promoting a domestic market, a simpler solution would be to ban the export of objects deemed to be scientifically or historically significant. This approach has been adopted by the Australian government in its effort to prevent the export of valuable cultural objects.<sup>284</sup> Under such a paradigm, persons who collect fossils on private land may possess such items but may not export them without a permit. As the United States presently bans the sale and export of items such as eagle feathers,<sup>285</sup> a similar law prohibiting the export of *significant* paleontological objects would not be an unconstitutional restraint on property rights.<sup>286</sup>

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283. It is possible that the matrix, or soil still attached to the fossil, may match the soil found in a particular locality. In some cases, witnesses or experts may corroborate evidence regarding the origin of the fossil.

284. Protection of Movable Cultural Heritage Act, No. 11 (1986) (Austl.).

285. 16 U.S.C. § 668(a) (1988).

286. See, e.g., *Andrus v. Allard*, 444 U.S. 51, 64-65 (1979) (concluding that the prohibition of the sale of lawfully acquired property, in this case eagle feathers, did not violate Fifth Amendment property rights).

Canada and the United States also differ with respect to their import regulations. Canada has adopted the "blank check" rule, while the United States has adopted a model of selective import controls.<sup>287</sup> Critics of the "blank check" rule point out that the application of this rule is cumbersome and inefficient because customs officials must apply different rules depending on the declarant's country of origin.<sup>288</sup> Thus, a customs official must have a working knowledge of the foreign export regulations of dozens of countries. Another criticism of this method of import regulation is that it removes the power of policy decision making from the destination country.<sup>289</sup> Canada, therefore, cannot make its own judgment of whether the transport of certain materials should be permitted. On the other hand, Canada's approach is compatible with the spirit of international cooperation because it honors the protective laws of other countries.

The "blank check" rule is advantageous because it creates another hurdle for smugglers to traverse in order to market their goods abroad. If a potential market country will not permit the entry of certain artifacts, it is difficult for the smuggler to successfully transport and sell those goods in that country. If the United States is to effectively control the export of cultural property such as paleontological objects, it should adopt an approach similar to that adopted in Canada.

The U.S. model of selective import control allows the government to make its own policy decisions. The drawback to this system is that once a smuggler successfully transports a fossil out of the source country, no laws deter him or her from marketing the fossil in the United States. The lack of import restrictions may explain why the United States is a major market country for cultural property such as fossils and artwork.

Thus, the United States would benefit from legislation regulating the export of scientifically valuable fossils. A model similar to those enacted in Canada and Australia would be

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287. Selective import controls is a model of customs control in which a country bans the import of certain items under specific conditions. For example, the United States bans the import of Pre-Columbian art. 19 U.S.C. § 2095 (1988 & Supp. V 1993). Under the implementation regulations of the UNESCO Convention, the United States bans the import of archaeological or ethnological objects, which are in danger of pillage. 19 U.S.C. § 2602 (1988).

288. BATOR, *supra* note 244, at 53.

289. *Id.* at 52.

particularly effective. In addition, import regulations similar to Canadian import regulations may deter smugglers from laundering illegally exported paleontological objects in the United States.

### VIII. CONCLUSION

There will always be a market for paleontological artifacts because they are, by their very nature, unique and irreplaceable. The most effective way to protect paleontological specimens is through preventative measures. Strict domestic regulation and enforcement of fossil collection are effective as exemplified by the laws of the Province of Alberta. The ratification of comparable legislation in the United States will result in similar success.

The VPRPA's ideological goals to promote education and scientific interest serve a two-fold purpose. First, the VPRPA will continue to protect the interests of amateur collectors and, thus, will facilitate and encourage intellectual curiosity. Second, the bill preserves scientifically significant fossils so that they are available for public display and scientific research.

The VPRPA also has several practical advantages. First, like Alberta's Historical Resources Act, the VPRPA imposes strict penalties that will ostensibly deter fossil poachers. Second, the bill attempts to standardize the permit process between land management agencies. Third, the VPRPA limits the nature and extent of commercial collecting on public lands so that commercial collecting is conducted for the public's benefit, and only the most competent collectors may conduct excavations. Even if Congress does not pass the VPRPA or the PRPA, the United States would benefit from legislation similar to the VPRPA or Historical Resources Act as present laws inadequately deal with the increasing incidents of fossil poaching.

Domestic regulations restricting fossil collecting are not sufficient when there is great demand for fossils abroad. Therefore, if the United States is to effectively control fossil smuggling, import and export regulations restricting the movement of significant and valuable paleontological specimens are needed. Existing U.S. laws have limited application and more vigorous regulation similar to that of Canada is needed. The United States is also a market for fossils from other countries; therefore, the United States, as well as other market countries, should participate in the effort toward international cooperation and should respect

the protective laws of other nations by controlling the import of illegally excavated fossils.

Fossils are part of our national heritage and warrant a certain degree of protection. Like any other vanishing or limited natural resource, an active interest from both the government and its citizens will prevent the loss of valuable paleontological specimens. Only a concerned legislative body will enact laws that will protect paleontological resources. Moreover, only an informed and concerned citizenry will motivate legislators to enact adequate laws. There must be a shift from the popular belief that public lands exist for the use of the citizenry to the idea that the citizenry is a steward of public lands. It is our responsibility to protect our natural resources for the enjoyment of future generations.

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