

FOSSIL MANAGEMENT FOR BRITISH COLUMBIA

**A Review of Fossil Management in Other Jurisdictions
With Recommendations for British Columbia**

By

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FOSSIL MANAGEMENT FOR BRITISH COLUMBIA

1.0 EXECUTIVE SUMMARY

Fossils represent the historical record of the evolution and development of life on Earth. Fossils are important for their natural heritage, scientific and educational value. British Columbia has a rich and diverse variety of the fossils and fossil deposits resulting from the complex geological processes that formed British Columbia.

British Columbia does not have a program to manage fossils and fossil sites as a provincial resource. Conflicts have arisen between scientific, recreational and commercial interests in fossils. In the fall, 2002, the Minister of Sustainable Resource Management asked that a working group comprised of the Ministry of Sustainable Resource Management, Ministry of Energy and Mines, Ministry of Water, Land and Air Protection, the Royal British Columbia Museum and Land and Water British Columbia, Inc. be reconvened to:

- Conduct a jurisdictional review of fossil management in Canada, the United States and other countries as applicable; and
- Identify options and make recommendations for fossil management in British Columbia.

The purpose of this report to present the findings of the jurisdictional review and to make recommendations for the development of policy for fossil management in British Columbia.

Background

In 1985, a permit to collect fossils was issued under the *Heritage Conservation Act* to an out-of-province commercial collector. The following year, the Heritage Conservation Branch decided they were not an appropriate agency to issue these permits and requested that future permits be issued under the *Land Act*.

In the late 1980's and early 1990s, a number of *Land Act* investigative permits were issued for scientific fossil collecting to out-of province Canadian museums. Two commercial fossil collecting permits were issued to out-of-province commercial fossil companies. Applications for the investigative and commercial permits were referred to the Royal British Columbia Museum for review.

The Royal British Columbia Museum has played a significant role over the years by being a scientific source for palaeontology and for provided recommendations for terms and conditions for the Crown land permits and for mining tenures.

In the case of the commercial permits, the province reserved the right to retain any or all of the fossils if they were considered to be scientifically significant. The holder of one of the commercial permits removed large Triassic fish fossils valued at thousands of dollars

from British Columbia without the province having an opportunity to select specimens. The collector tried to export the fossils from Canada without a federal export permit. The fossils were seized by Canada Customs. The collector was fined and the courts had to determine what to do with the fossils. The Minister responsible for the *Land Act* wrote to the Minister of National Revenue and requested that the fossils be returned to British Columbia because the terms and conditions of the provincial permit were not fulfilled and the specimens have heritage and scientific value to the people of British Columbia. The fossil fish were returned to the province and are in the Royal British Columbia Museum collections.

In 1989, a Palaeontology Technical Working Committee was formed by the then Ministry of Municipal Affairs, Recreation and Culture. Its mandate was to recommend policy directions for the management of British Columbia's palaeontological resources. The Committee presented their report in 1990 and made 15 recommendations. For reasons unknown, these recommendations were not acted upon.

Due to the unclear statutory authority, a 1992 protocol agreement between the former Ministry of Environment, Lands and Parks (Crown Lands) and the Ministry of Energy and Mines was signed to the effect that fossils were treated as a component of "Crown land" under the *Land Act*. The protocol agreement provided that "collectable fossils" (not defined, but considered to be any macroscopic fossils) would be administered under the *Land Act* rather than the *Mineral Tenure Act*.

In 1997, an internal government legal opinion indicated that fossils can be considered under the broad definition of "mineral" under the *Mineral Tenure Act*. On being advised of the legal opinion, no further fossil collecting permits were issued under the *Land Act*.

Fossil Management Issues

There is no clear authority or policy for fossil management in British Columbia. Fossil collecting for scientific, recreational and commercial purposes occurs today without specific permits and is largely unregulated. Fossils are collected by people and institutions from British Columbia, from other areas within Canada and from outside of the Canada.

Fossils from British Columbia collected by unknown people are being sold around the world on a number of commercial fossil dealers' websites for tens of dollars to thousands of dollars. These specimens have not been examined to determine their historical, scientific or educational value to British Columbia.

There are scientifically significant fossil sites where free miners have staked mineral claims, apparently giving the free miners the legal rights to the fossils as minerals.

The British Columbia Palaeontological Alliance is an umbrella organization of professional and amateur palaeontologists representing six regional palaeontology societies and a number of supporting museums, institutions and organizations interested in palaeontology. The Alliance began writing to the government in the late 1990's

expressing concerns about the unregulated commercial collecting that was occurring on scientifically important fossil beds and the loss of significant British Columbia fossils being sold within and outside of Canada. The Alliance expressed their concerns about mineral claims being staked over scientifically significant fossil sites. The Alliance has asked the province to develop policy to regulate commercial fossil collecting, protect scientifically significant sites and has offered to assist the province in developing the policy.

Individual palaeontologists have also written to government expressing their concerns about unregulated commercial collecting, the loss of scientifically important fossils and the lack of protection for significant fossil sites.

The British Columbia Palaeontological Alliance has cooperated with the Land and Resource Management Plan process by submitting reports and making recommendations on palaeontological resources at the request of the plan tables. Reports submitted for the Kamloops LRMP, Dawson Creek LRMP and the Lake District LRMP are examples. The British Columbia Palaeontological Alliance has also proposed that a provincial fossil be designated as an official symbol of British Columbia.

Scientifically important fossils, owned by the province, are being lost to the people of British Columbia.

Conclusions of the Jurisdictional Review

Jurisdiction for Fossil Management and Protection

Most jurisdictions recognize and manage fossils as heritage resources of highest priority for science and education. These jurisdictions have clear statutory definitions for fossils that distinguish them from minerals and a policy or regulatory framework for the management of fossils. Significant fossil sites may be protected through designations as heritage or historic sites or established in a provincial, state or federal park.

In some jurisdictions, fossil could be considered minerals on the basis of broad definitions of minerals. The large-scale excavation of certain types of fossils such as ammonite shell or petrified wood for commercial purposes may be authorized under mining laws in certain cases.

Ownership

All fossils on public lands belong to the provincial, state or federal authority with jurisdictions for the public lands. Many jurisdictions provide clear statutory statement of government ownership of fossils on public lands. Most jurisdictions, but not all, recognize that fossils on private land are owned by the land owner. Some jurisdictions provide for people who collect fossils from public lands to retain the fossils in a custodial role even though ownership of the fossils is retained by the government. In certain cases,

provision may be made for persons to gain ownership of fossils from older private collections or of common fossils not considered to be significant.

In British Columbia, the ownership of fossils on settlement lands is conveyed to First Nations through the treaty settlement process. In the United States, fossils on Indian Lands are held in trust for the benefit of the Indian people by the federal government.

Collecting and Permits

Fossil collecting on public lands is regulated to varying degrees in the majority of jurisdictions. Scientific collecting by permits to qualified researchers is often the only type of collecting allowed in many jurisdictions. Commercial collecting is rarely allowed and, if so, under permits with restricted conditions and often confined to common specimens not considered to be of scientific importance. Recreational collecting is often allowed without permits as long as the collecting is confined to the loose surface of the land or with minimal disturbance by hand tools to the land surface, and to the collection of common fossils within certain quantity limits.

Advisory Committee

A number of jurisdictions provide for the establishment of a Technical Advisory Committee to provide advice and guidance on the management of fossils on public lands.

Administration

Limited information was obtained on the administrative effort and costs to undertake a fossil management and permitting program. Jurisdictions that provided information usually issued permits only for scientific collecting of fossils. Experience in Alberta suggests that one full-time person and several persons part-time may be required for issuing up to 15 permits per year with costs of about \$100,000.

Many jurisdictions do not charge for permits or charge only a nominal fee so there is little revenue.

One jurisdiction, Wyoming, allows the commercial collecting of common species and collects royalties on the gross sale of fossils.

Impact Assessment

A number of jurisdictions provide authority to require impact assessments when propose development or construction will or has the potential to destroy, damage or interfere with fossil sites. Impact assessments required for heritage resources includes fossils.

Offence and Penalties

All jurisdictions that manage fossil as statutory heritage, scientific and educational resources provide for an offence and penalties for contravention of the statute. The nature of the offence and the extent of penalties vary among the jurisdictions.

Recommendations

British Columbia, in consultation with stakeholders, should develop policy for fossil management based on the following fossil management framework.

1. Establish clear jurisdiction for fossil management

- Clarify statutory jurisdiction for the management of fossils.
- Provide a clear definition of fossils to avoid conflicts with the allocation of minerals, coal and oil and gas resources.
- Clarify that ownership of fossils taken from Crown land is vested in the Crown in the right of British Columbia. Consider a “custodian” role for individuals or institutions possessing collections of fossils taken from Crown land. Identify situations where the province may consider transfer of ownership to other parties.
- Clarify whether fossils on private land are the property of the owner of the land or of the Crown.
- Develop a protocol agreement with Canada to ensure that only fossils collected under appropriate provincial permits are considered for export permits from Canada. Ensure provincial review of all applications to export British Columbia fossils.

2. Establish a strategic fossil resource management program and policy

- Provide that the priority interests in fossils are science, natural heritage and education. Commercial interests in fossils may also be considered if they are compatible with scientific, natural heritage and educational interests. Commercial activities that do not require excavation and that are consistent with science, natural heritage and educational values should have precedent over the commercial excavation of fossils for sale.
- Provide for the protection of significant fossil sites where warranted.
- Develop a fossil management framework that provides motivation and encouragement to the professional, amateur and commercial (i.e. ecotourism) palaeontological community to collect fossils in a scientific manner.
- Require permits for the commercial extraction, sale or removal of fossils from the province.
- Provide a system of permitting or notification for scientific collecting that is not onerous or costly to researchers.
- Consider a low level of collecting activity (i.e. hand collecting, surface collecting) without permits by amateur palaeontologists as long as the fossils are made

available for science and there is no sale or removal of the fossils from the province.

- Consider requiring impact assessments when development or construction activity may threaten the scientific, heritage or education values for fossils.
- Ensure that First Nations interests are considered in fossil management.
- Establish a Palaeontological Technical Advisory Committee under the *Heritage Conservation Act* appointed by the Minister to advise on fossil management issues. Members could include professional and amateur palaeontologists, the Royal BC Museum, academic institutions, MEM, oil and gas and/or mining industry, Canadian Geological Survey and other individuals familiar with fossil management issues.
- The Palaeontological Technical Advisory Committee could set priorities for the protection of fossil resources and sites, set standards for the evaluation of fossil resources and sites, provide standard technical terms and conditions for fossil collecting permits and identify legislative or regulatory needs for fossil management.

3. Establish operational and administrative processes for fossil management.

- Provide administrative procedures based on existing policies and procedures wherever possible.
- Establish the information requirements to apply for fossil collecting. Identify any application and documentation fee requirements.
- Ensure applications receive scientific review and permits contain appropriate technical terms and conditions for fossil management.
- Establish a royalty for commercial collecting to ensure a fair return to the Crown.
- Understand and establish mitigation strategies to deal with those fossil sites already being exploited, whether the person has mineral claims or is simply removing fossils without tenure.

2.0 INTRODUCTION

Fossils represent the historical record of the evolution and development of life on Earth. Fossils are important for their natural heritage, scientific and educational value.

Palaeontology is the study of fossils. A fossil may be defined as any trace of a past life form. Although wood, bones, and shells are the most common fossils, under certain conditions soft tissues, tracks and trails, and even coprolites (fossil feces) may be preserved as fossils. Although most of the fossils that palaeontologists study are several thousands to millions of years old, there is no absolute minimum age for a biological structure to be a fossil.

Palaeontology differs from archaeology and anthropology. **Archaeologists** primarily work with human artifacts - objects and structures that have been made by humans - and with human remains. **Anthropologists** work with humans, their cultures, societies, languages, and ways of life. Some palaeontologists do study the fossil record of humans and their relatives. However, palaeontology as a whole encompasses all life, from bacteria to whales.

British Columbia has a rich and diverse variety of the fossils and fossil deposits resulting from the complex geological processes that formed British Columbia. These fossils include extinct life forms of animals and plants such as mammoth elephants and giant bison from the last Ice Age that ended 10,000 years ago to early life forms such as the exquisitely preserved marine fauna in the Burgess Shale at Mt. Field in Yoho National Park extending back over 500 million years ago to Palaeozoic times.

Fossil beds deposited at different times and under different conditions will have fossils that represent the environment and species diversity of that time. One fossil bed may have plants and insects, another bed may contain marine sea creatures and still another bed may have land animals. The recent discovery of dinosaur bones and tracks near Tumbler Ridge and of dinosaur tracks and turtles in the Bowser Basin north of Terrace are only two examples of important scientific fossil discoveries in British Columbia.

Fossils are an important tool in determining the age of rocks and sediments and the environment in which the rocks and sediments formed. Such information is important to the oil and gas and mining industries for the purpose of exploration and development of resources and in describing the origin and history of British Columbia's landscape.

British Columbia does not have a program to manage fossils and fossil sites as a provincial resource. Conflicts have arisen between scientific, recreational and commercial interests in fossils. In the fall, 2002, the Minister of Sustainable Resource Management asked that a working group comprised of the Ministry of Sustainable Resource Management, Ministry of Energy and Mines, Ministry of Water, Land and Air Protection, the Royal British Columbia Museum and Land and Water British Columbia, Inc. be reconvened to:

- Conduct a jurisdictional review of fossil management in Canada, the United States and other countries as applicable; and
- Identify options and make recommendations for fossil management in British Columbia.

The purpose of this report to present the findings of the jurisdictional review and to make recommendations for the development of policy for fossil management in British Columbia.

3.0 BACKGROUND

Fossil Permits in the 1980's and 1990's

In 1985, a permit to collect fossils was issued under the *Heritage Conservation Act* to an out-of-province commercial collector. The following year, the Heritage Conservation Branch decided they were not an appropriate agency to issue these permits and requested that future permits be issued under the *Land Act*.

In the late 1980's and early 1990s, a number of *Land Act* investigative permits were issued for scientific fossil collecting to out-of province Canadian museums. Two commercial fossil collecting permits were issued to out-of-province commercial fossil companies. Applications for the investigative and commercial permits were referred to the Royal British Columbia Museum for review. The Royal British Columbia Museum provided recommendations for terms and conditions for the permits.

The Royal British Columbia Museum has played a significant role over the years by being a scientific source for palaeontology and for provided recommendations for terms and conditions for the Crown land permits and for mining tenures..

In the case of the commercial permits, the province reserved the right to retain any or all of the fossils if they were considered to be scientifically significant. The holder of one of the commercial permits removed large Triassic fish fossils valued at thousands of dollars from British Columbia without the province having an opportunity to select specimens. The collector tried to export the fossils from Canada without a federal export permit. The fossils were seized by Canada Customs. The collector was fined and the courts had to determine what to do with the fossils. The Minister responsible for the *Land Act* wrote to the Minister of National Revenue and requested that the fossils be returned to British Columbia for the following reasons:

- The fossils were collected from provincial Crown land pursuant to a *Land Act* permit and the provisions of the permit to allow specimens to be selected by the Royal British Columbia Museum were not fulfilled.
- The fossils were excellent specimens and would have likely been selected by the museum under the terms of the permit.
- Because of their scientific importance and display quality, the specimens have considerable cultural, heritage and scientific value to the people of British Columbia and should be placed in the Royal British Columbia Museum.

The fossil fish were returned to the province and are in the Royal British Columbia Museum collections.

Due to the unclear statutory authority, a 1992 protocol agreement between the former Ministry of Environment, Lands and Parks (Crown Lands) and the Ministry of Energy and Mines was signed to the effect that fossils were treated as a component of “Crown land” under the *Land Act*. The protocol agreement provided that “collectable fossils” (not defined, but considered to be any macroscopic fossils) would be administered under the *Land Act* rather than the *Mineral Tenure Act*.

In 1997, an internal government legal opinion indicated that fossils can be considered under the broad definition of “mineral” under the *Mineral Tenure Act*. On being advised of the legal opinion, no further fossil collecting permits were issued under the *Land Act*.

1990 Fossil Management Review

In 1989, a Palaeontology Technical Working Committee was formed by the then Ministry of Municipal Affairs, Recreation and Culture. Its mandate was to recommend policy directions for the management of British Columbia’s palaeontological resources.

The Committee presented their report in 1990 and made 15 recommendations (Appendix 1). For reasons unknown, these recommendations were not acted upon. These recommendations, although somewhat dated, are sound in principle and provide a basis for policy recommendations for this current report.

Fossil Management Issues

There is no clear authority or policy for fossil management in British Columbia. Fossil collecting for scientific, recreational and commercial purposes occurs today without specific permits and is largely unregulated. Fossils are collected by people and institutions from British Columbia, from other areas within Canada and from outside of the Canada.

Fossils from British Columbia collected by unknown people are being sold around the world on a number of commercial fossil dealers’ websites for tens of dollars to thousands of dollars. Specimens have not been examined to determine their historical, scientific or educational value to British Columbia.

There are scientifically significant fossil sites where free miners have staked mineral claims, apparently giving the free miners the legal rights to the fossils as minerals. Examples include the McAbee fossil (fish, insects, plants) beds between Kamloops and Cache Creek, and trilobite fossil beds in the Kootenays.

The British Columbia Palaeontological Alliance is an umbrella organization of professional and amateur palaeontologists representing six regional palaeontology societies and a number of supporting museums, institutions and organizations interested

in palaeontology. The Alliance began writing to the government in the late 1990's expressing concerns about the unregulated commercial collecting that was occurring on scientifically important fossil beds and the loss of significant British Columbia fossils being sold within and outside of Canada. The Alliance expressed their concerns about mineral claims being staked over scientifically significant fossil sites. The Alliance has asked the province to develop policy to regulate commercial fossil collecting, protect scientifically significant sites and has offered to assist the province in developing the policy.

Individual palaeontologists have also written to government expressing their concerns about unregulated commercial collecting, the loss of scientifically important fossils and the lack of protection for significant fossil sites.

The British Columbia Palaeontological Alliance has cooperated with the Land and Resource Management Plan process by submitting reports and making recommendations on palaeontological resources at the request of the plan tables. Reports submitted for the Kamloops LRMP, Dawson Creek LRMP, Lake District LRMP and the Lillooet LRMP are examples. The British Columbia Palaeontological Alliance has also proposed that a provincial fossil be designated as an official symbol of British Columbia.

Scientifically important fossils, owned by the province, are being lost to the people of British Columbia.

4.0 LEGISLATION AND REGULATION

Information on legislation and regulation gathered during this jurisdictional review was obtained from the websites of different provinces and states and from direct contact, when possible, with representatives of those jurisdictions. Publications and articles of interest in this review are listed at the end of this paper.

The emphasis of the review is placed on Canadian jurisdictions and selected examples from the United States and China.

5.0 CANADA

5.1 British Columbia

Legislation and Regulation

Heritage Conservation Act, RSBC 1996, Ch. 187

Responsibility: Minister of Sustainable Resource Management

Definitions

"Heritage value" means the historical, cultural, aesthetic, scientific or educational worth or usefulness of a site or object.

"Heritage object" means, whether designated or not, personal property that has heritage value to British Columbia, a community or an aboriginal people.

"Heritage site" means, whether designated or not, land, including land covered by water, that has heritage value to British Columbia, a community or an aboriginal people.

Mineral Tenure Act, RSBC 1996, Ch. 292

Regulation of the Chief Gold Commissioner, BC Reg. 357/2003

Responsibility: Minister of Energy and Mines

Definitions

"Free miner" means a person who holds a valid and subsisting free miner certificate issued under this Act or any of the former Acts.

"Mineral" means an ore of metal, or a natural substance that can be mined, that is in the place or position in which it was originally formed or deposited or is in talus rock, and includes

- (a) rock and other materials from mine tailings, dumps and previously mined deposits of minerals,
- (b) dimension stone, and
- (c) rock or a natural substance prescribed under section 2 (1),

but does not include

- (d) coal, petroleum, natural gas, marl, earth, soil, peat, sand or gravel,
- (e) rock or a natural substance that is used for a construction purpose on land that is not within a mineral title or group of mineral titles from which the rock or natural substance is mined,

- (f) rock or a natural substance on private land that is used for a construction purpose, or
- (g) rock or a natural substance prescribed under section 2 (2).

"Mineral claim" means a claim to the minerals within an area which has been located or acquired by a method set out in the regulations and includes a claim to minerals recorded under one of the former Acts.

Land Act, RSBC 1996, Ch.245

Responsibility: Minister of Sustainable Resource Management

Definitions

"Crown land" means land, whether or not it is covered by water, or in interest in land, vested in the government.

Aspects of the Legislation and Regulations Pertaining to Fossil Management

Jurisdiction for Fossil Management and Protection

- The *Heritage Conservation Act* recognizes fossils under the definition of "heritage value" as objects or sites that have historical, scientific and education worth or usefulness. Heritage objects and sites may be protected by designation as Provincial Heritage Objects or Provincial Heritage Sites. The designation may specify permissible activities may occur and what activities require permits under the Act.
- Only designated fossils or fossil sites are protected under the *Heritage Conservation Act*.
- Three fossil sites in British Columbia have been designated as Provincial Heritage Sites. Two sites, designated in 1930 in the Peace River area, are for ichthyosaur tracks and fossilized skeletal remains and for dinosaur tracks. The third site, designated in 1989, is on the Puntledge River, Vancouver Island where the skeleton of an elasmosaur was found.
- Fossil sites are also protected when located within the boundaries of a provincial park. Strathcona Park and Driftwood Canyon Park are two examples. A fossil management plan has been prepared for the Driftwood Canyon Park.
- Fossil sites have been designated as protected areas through the Land and Resource Management Plan (LRMP) process. Protection of the Triassic fish fossil site in the Dawson Creek LRMP is an example.
- A 1997 internal government legal opinion included fossils under the broad definition of "mineral".
- Work on a mineral claim is subject to the *Mines Act*, but that statute provides that hand work, of the type normally involved in fossil extraction, does not require a Notice of Work or permits. There is no external review of the fossils extracted as to their scientific significance to the province. The claim holders may sell the fossils, but the Crown receives no revenue or royalties from the sale of fossils.

- The *Mineral Tenure Act* allows the Chief Gold Commissioner, by regulation, to place a reserve (no staking reserve) over the land to prohibit the locating or recording of mineral claims.
- Earlier reserves were absolute reserves that prohibited the locating or recording of any mineral claims. More recent reserves are “partial” reserves that allow the locating and recording of claims with the condition that “the free miner must not obstruct, endanger or interfere with or allow any other person to obstruct, endanger or interfere with a palaeontological site or materials or pale ontological significance in the reserve”. The mineral claims in these partial reserves do not give the claim holders the rights to fossils. These reserves have been established at the request of the BC Palaeontological Alliance. The Ministry of Energy and Mines has also place a reserve over the area of the recent dinosaur track find in the Bowser Basin.
- The *Mineral Tenure Act* provides for the Minister by order to restrict the surface rights or rights to or an interest in minerals (i.e. fossils) in a mineral title if the Minister considers the surface area, rights or interests in minerals should be used for a purpose other than a mining activity (i.e. scientific research). No compensation is payable as a result of a Minister’s order to restrict the surface rights.
- The chief gold commissioner may cancel a mineral claim if a recorded holder deliberately fails to comply with an order of the chief gold commissioner, the Act or regulations,
- Under the *Mineral Tenure Act*, the Minister and the Minister responsible for the *Land Act* may jointly make regulations prescribing a rock or natural substance as a mineral or not as a mineral. If a rock or natural substance was prescribed as not a mineral, the rock or natural substance would be a component of Crown land under the administration of the *Land Act*.
- The use of or sale of Crown land may be authorized for a wide range of purpose under the *Land Act*. The administration of the *Land Act* has been delegated to Land and Water British Columbia Inc., a government corporation, by the Minister of Sustainable Resource Management.
- Fossil extraction or collection is not authorized under the *Land Act* based on the 1998 legal opinion that fossils are minerals.
- Two commercial licences related to fossil mineral claims have been issued under the *Land Act*. One licence is for commercial recreation of guided tours to a scientifically significant fossil trilobite site under a mineral claim in the Kootenay region. After receiving the commercial recreation licence, the holder tried to sell the licence for \$1.5 million dollars on eBay. There were no takers. The other commercial licence, for general commercial purposes, was issued over nine hectares within a fossil mineral claim (Zugg 1) near Kamloops. The licence authorizes a parking area, tour bus turn-around area, a small storage shed and a portable sanitary facility.
- The *Land Act* authorizes “quarrying” for rock and natural substances such as earth, peat, sand and gravel that are not included under the definition of mineral. This includes rock or natural substances that the minister responsible for the *Mineral Tenure Act* and the minister responsible for the *Land Act* may jointly

- make regulations to designate the rock or natural substance as not a mineral. Royalties may be collected for the extraction of quarry materials from Crown land.
- The *Land Act* provides for a system of reserves, designations and prohibition of specified land uses that can be used to recognize other resource values on Crown land and guide decisions as to whether land uses should be authorized. These reserves, designations and prohibitions do not provide protection to other values on the land and only apply to authorizing land use under the *Land Act*.

Ownership

- Crown land and the resources in or on the land are owned by the Crown in the right of British Columbia. Fossils on Crown land, although not defined or specified in legislation or regulation as belonging to the Crown, are owned by the Crown.
- According to the single legal opinion, it would appear that mineral claim holders have the rights to fossils as minerals within a claim unless the fossils have been reserved.
- Fossils on private land may or may not be owned by the property owner depending on interpretation of the 1997 legal opinion that fossils are minerals. Rights to minerals are reserved to the Crown when Crown land is sold by Crown grant. Fossils may be included in the reservation to the Crown.
- The rights to fossils, along with other resources, are conveyed to First Nations as part of the settlement lands negotiated through the treaty settlement process.

Collecting and Permits

- Fossil collecting for scientific, recreational or commercial purposes is unregulated in British Columbia except in provincial parks and ecological reserves.
- No permits are issued for fossil collecting on Crown land outside of protected areas at this time.

Advisory Committee

- The *Heritage Conservation Act* provides for the minister to establish advisory committees to advise the minister on matters related to the Act or to the conservation of heritage sites, objects or resources.

Administration

- There is no administrative process for fossil management at this time.

Impact Assessment

- There are no requirements to consider impacts on palaeontological resources and sites during environmental assessments related to development and construction projects on Crown land.

Offence and Penalties

- An individual that contravenes the *Heritage Conservation Act* and is convicted of an offence may be fined up to \$50,000 and/or imprisoned for up to 2 years. A corporation convicted of an offence may be fined up to \$1 million.

5.2 Alberta

Legislation and Regulation

Historical Resources Act, RSA, Ch. H-9, 2000

Archaeological and Palaeontological Research Permit Regulation, AR 254/2002

Disposition Regulation, AR 101/1998

Responsibility: Minister of Community Development

Definitions

Historical Resources Act

“Historic resource” means any work of nature or of humans that is primarily of value for its palaeontological, archaeological, prehistoric, historic, cultural, natural, scientific or aesthetic interest including, but not limited to, a palaeontological, archaeological, prehistoric, historic or natural site, structure or object.

"Historic site" means any site that includes or consists of an historical resource of an immovable nature or that cannot be disassociated from its context without destroying some or all of its value as an historical resource and includes a prehistoric, historic or natural site or structure.

“Palaeontological resource” means a work of nature consisting of or containing evidence of extinct multicellular beings and includes those works of nature or classes of works of nature designated by the regulations as palaeontological resources.

Archaeological and Palaeontological Research Permit Regulation

“Development” means any change to the existing state or land that affects or is likely to affect archaeological or palaeontological resources located on, in or under the land.

“Excavate” means to expose, extract or remove palaeontological resources from their original context in the surrounding bedrock or enclosing sediments.

"Mitigative research project" means an assessment carried out to determine the impact a proposed development will have on archaeological or palaeontological resources in the area where the development is proposed to be carried out.

"Palaeontological research project" means a specific research program carried out for the purpose of locating, recovering, analyzing and interpreting palaeontological resources.

"Palaeontological survey" means an examination of a physical land area, including subsurface deposits, for the purpose of obtaining information on the palaeontological

resources located on, in or under the land.

“Provincial Palaeontologist” means the person who holds the position of Director, Royal Tyrrell Museum of Palaeontology, and includes the designate of that person.

Disposition Regulation, AR 101/1998

"Ammonite shell" means a work of nature consisting of or containing evidence of the external skeleton of an extinct cephalopod having ammonitic sutures, that is, sutures with subdivided lobes and saddles.

"Committee" means the Alberta Palaeontological Advisory Committee established pursuant to section 8 of the Act.

"HRA exemption" means an exemption granted under section 30(2) of the Act that allows the person to whom it is granted to make an excavation for the purpose of seeking or collecting any palaeontological resource listed in Schedule 1, Control List.

Mines and Mineral Act

Ammonite Shell Regulation, AR 152/2004

Responsibility: Minister of Energy

Ammonite Shell Regulation, AR 152/2004

“Agreement” means an agreement issued under section 3 of the regulation.

“Ammonite Shell” means the same as under the Disposition Regulation.

"Dispositions Regulation" means the Dispositions Regulation (AR 101/98) made under the *Historical Resources Act*.

"Holder" means the holder of an agreement.

"HRA exemption" means an exemption granted under section 30(2) of the Historical Resources Act that permits the person to whom the exemption is granted to make an excavation for the purpose of seeking or collecting ammonite shell.

“Non-exposed ammonite shell" means ammonite shell that is not exposed on the ground surface.

Aspects of the Legislation and Regulations Pertaining to Fossil Management

Jurisdiction for Fossil Management and Protection

- Fossils are under the jurisdiction of the *Historical Resources Act* and are recognized in the definitions of “palaeontological resources”, “historic resources” and “historic sites”.

- Fossils are not “minerals” under the *Mines and Mineral Act*.
- The *Historical Resources Act* was amended in 1978 to include palaeontological resources. The amendments came into force July 5, 1978.
- The minister, in the public interest, may protect or preserve significant historic resources by designation as a “Provincial Historic Resource” or a “Registered Historic Resource”. If applicable, the designation may be registered on the certificate of land title.
- When Alberta added palaeontological resources to the *Historic Resources Act* in 1978, there were a few small operations exploiting ammonite shell and oyster shell as a mineral resource. The Disposition Regulation was developed to provide an exemption for certain fossil materials (Control List) to allow commercial development in those cases as long as scientifically significant material was retained by the Crown.
- Fossil sites may also be protected through provincial park designations.

Ownership

- All palaeontological resources collected from public or private lands are owned by the Crown in the right of Alberta.
- A certificate for palaeontological resources collected prior to July 5, 1978 may be issued to the person who collected the fossils stating the fossils are not owned by the province. A person is entitled to apply only one time for a certificate. Less than 100 certificates were issued.

Collecting

- A permit or an exemption is required for any fossil collecting that necessitates “excavation” in order to collect the fossil.
- Any removal of fossils that involves hand tools, machinery or other means to free the fossils from the bedrock or sediments, no matter how minimal the disturbance, is an excavation.
- Surface collecting (not defined by statute or regulation) does not require a permit or an exemption if the fossils are exposed on the surface of the ground, are clearly free from the bedrock or sediments and does not require excavation.
- Fossils collected from the surface by recreational or avocational collectors may be retained by the collectors as custodians, but ownership remains with the Crown.
- Collecting of fossils for commercial purposes is not allowed.
- Permission from the owners must be obtained to collect fossils on private land.

Alberta Palaeontological Advisory Committee

- A committee appointed by the Minister consisting of six members with professional and non-professional backgrounds: one member each from the University of Alberta and the University of Calgary, one member from the Geological Survey of Canada, a member from the amateur palaeontological community (Alberta Palaeontological Society), one member from the oil and gas industry and a non-voting member from the Royal Tyrrell Museum of Palaeontology.

- There are no specific qualifications to be a member of the committee, but all members are expected to have a good understanding of palaeontological issues in Alberta. The committee meets usually once a year and receives expenses for attending meetings.
- The committee advises the Provincial Palaeontologist regarding applications for research permits.
- The committee advises the Minister regarding exemption applications for dispositions certificates, resource acquisitions, resource custody and collection exchanges.

Permits

- A research permit is the only type of excavation permit that is issued and only for the purposes of a palaeontological research project, palaeontological survey or a mitigative research project.
- A research permit to excavate fossils on Crown or private land is only issued to qualified professionals with a graduate degree in palaeontology. A research permit may also be issued to a palaeontology graduate student when sponsored by a person qualified to receive a permit.
- Permits are approved by the Provincial Palaeontologist.
- Alberta has no plans to issue commercial or recreational collecting permit. The province believes the only way to properly preserve fossils for Albertans is to have them excavated by trained professionals.

Exemptions

- The mining of unexposed ammonite shell is subject to an agreement under the *Mines and Mineral Act*, Ammonite Shell Regulation and an exemption under the *Historical Resources Act*, Disposition Regulation.
- An exemption may be granted to a person to make an excavation for the purpose of collecting palaeontological resources listed in Schedule 1, Control List – ammonite shell, oyster shell, petrified wood and fossil leaf impressions.
- A disposition certificate conveying ownership rights to ammonite shell may be granted to the holder of an agreement under the Ammonite Shell Regulation if the minister is satisfied that the ammonite shell does not have scientific value or is not of sufficient quality for display purposes.
- Recent changes to the Ammonite Shell Regulation removed provisions for the “surface collection” of “exposed ammonite shell” from the Regulation. Surface collection of exposed ammonite shell under the former Regulation allowed recovery of the shell material by hand or by light, non-mechanized hand tools in a manner that would not cause more than minimal disturbance to the surface. The use of any tools causing even minimal disturbance to the surface is an “excavation”. The former Regulation required an agreement under the Regulation and an exemption under the *Historical Resources Act*. The result of changing to the Regulation is that the surface collecting of ammonite shell along with other fossils is now subject only to the *Historical Resources Act*.
- A disposition certificate for palaeontological resources collected on or after July 5, 1978, may be issued to a person if the fossils are in the Schedule 1, Control

- List, and do not have scientific value, are not of sufficient quality for display purposes or if the fossils are of a type found in such quantity that they are not required for scientific or display purposes.
- Custody, but not ownership, of fossils collected on or after July 5, 1978 and not listed in the Schedule 1, Control List, may be granted to a person. A person may apply for custody only one time.
 - Fossils in the custody of a person may not be traded, sold, altered or removed from the province without the permission of the minister.

Administration

- Applications for permits are made to the Royal Tyrrell Museum of Palaeontology. Applications are referred to the Alberta Palaeontological Advisory Committee for review and make recommendations to the Provincial Palaeontologist for approval or rejection.
- There are 10-15 active research permits at any time in the province. A research permit may be issued for more than one year. Application fees are not charged for research permits.
- Mitigative research permits are starting to be issued. The fee for a mitigative research permit is \$350 plus GST.
- One full time person and several persons from time-to-time are required to administer the permit system. Annual costs are estimated to be \$100,000 per year including salaries and other expenditures.

Impact Assessment

- Anyone who discovers a palaeontological resource while making an excavation for reasons (construction, development, etc.) other than recovering that resource must notify the Minister of Community Development.
- If the Minister believes that an operation or activity may alter, damage or destroy palaeontological historic resources, the Minister may order a person to:
 - undertake an assessment to determine the effect of the operation or activity on the historic resources;
 - submit a report on the assessment to the Minister; and
 - undertake all salvage preservative or protective measures or take any other action the Minister considers necessary.

Offence and Penalties

- Contravention of the *Historic Resources Act*, its regulations, the conditions of a permit or a direction of the Minister is an offence and subject to a fine of not more than \$50,000 and/or a term of imprisonment not more than one year.
- When a Provincial Historic Resource is altered or destroyed in contravention to the Act, regulations or direction of the Minister, the Minister may restore the Resource and recover the costs from the person causing the damage by an action in debt.
- If damage to a Provincial Historic Resource is such that restoration is not possible, the Crown may by action recover damages from the person causing the damage.

- There have been five to six people charged with an offence. Two or three people have been convicted resulting in fines of \$300 in one case and \$2500 in another.

5.3 Saskatchewan

Legislation and Regulation

The Heritage Property Act, SSK, Ch. H-2.2, 1980.

Responsibility: Minister of Culture, Youth and Recreation

Definitions

“Excavation” means the process of breaking, turning up, disturbing or removing vegetation, soil or other overburden in order to expose or remove heritage property, archaeological objects, stratotypes or other geological material.

“Heritage property” means:

- (i) archaeological objects;
- (ii) palaeontological objects;
- (iii) any property that is of interest for its architectural, historical, cultural, environmental, archaeological, palaeontological, aesthetic or scientific value; and
- (iv) any site where any object or property mentioned in subclauses (i), (ii) or (iii) is or may reasonably be expected to be found.

"Palaeontological object" means a fossil of a vertebrate animal or a macroscopic fossil of an invertebrate animal or plant that lived in the geological past, but does not include:

- (i) a fossil fuel and fossiliferous rock intended for industrial use; or
- (ii) any form, in addition to those mentioned in subclause (i), of a preserved remain or trace of a multicellular organism that may be prescribed in the regulations.

“Provincial Heritage Property” means any property designated pursuant to subsections 39(1), 45(1) or 55(1).

“Vertebrate palaeontological object” means the skeletal remains or the traces of activity of a vertebrate animal that lived prior to January 1, 1885.

Aspects of the Legislation and Regulations Pertaining to Fossil Management

Jurisdiction for Fossil Management and Protection

- Fossils are under the jurisdiction of *The Heritage Property Act* and are recognized in the definitions of “heritage property and “palaeontological object.
- Fossils are not minerals.
- Palaeontological objects or sites may be protected by Provincial Heritage Property designation.
- Fossil sites are also protected where included within provincial park boundaries.

Ownership

- Fossils are the property of the Crown in the right of Saskatchewan.
- All vertebrate palaeontological objects found in or taken from the land on or after November 28, 1980 and every other palaeontological object found in or taken from the land since 1993 is deemed the property of the Crown.
- Collectors of vertebrate palaeontological objects or of other palaeontological objects found prior to the above dates may apply to the minister for registration of the fossil material. Subject to any information the minister may require and if the minister is satisfied that the fossils were collected prior to the above dates, the fossils will be entered in a register of palaeontological objects found in Saskatchewan. Registration of a palaeontological object in the name of the collector is proof that the collector is the owner of the fossils.
- No person may buy, sell, trade or otherwise dispose of or remove any palaeontological object found in Saskatchewan without written permission from the minister

Collecting and Permits

- A regulation for issuing fossil permits has not yet been developed and currently the requirements for issuing archaeological permits are followed.
- Scientific research permits are for professional palaeontologists with expertise in collecting fossils and where excavation is required to collect fossils. Holders of research permits are required to submit a report on their activities.
- Avocational permits are for amateur collectors and allow only surface collecting and are usually confined to a limited geographical area. Surface collecting, although not defined in legislation or regulation, is interpreted to mean the same as in Alberta – the specimens must be exposed on the surface and be completely free from the bedrock or enclosing sediments.
- Holders of avocational permits are required to submit the fossils collected to the Royal Saskatchewan Museum for examination. In some cases, photographs of the fossils may suffice.
- The museum may retain any of the fossils collected under an avocational permit if they are of sufficient provincial significance and should be in the provincial collection. Specimens not retained by the museum are returned to the collector as a custodian of the fossils.
- The minister may appoint permit holders or any other person to be the custodian of palaeontological object subject to conditions imposed by the minister.
- Requests have been received for commercial collecting permits, but the province has not chosen to grant those permits.
- Anyone who discovers a palaeontological resource must notify the minister within 15 days. Any person who finds any palaeontological object, other than a vertebrate palaeontological object may apply to the minister for registration and must provide the minister with any information requested by the minister.

Administration

- Applications for permits are submitted to the Heritage Resources Unit who refer the applications to the provincial palaeontologist in the Royal Saskatchewan

Museum. The provincial palaeontologist determines whether the applications should be approved and, if so, whether certain restrictions or requirements should apply to the permits.

- Conditions for research permits tend to be broader than those for avocational permits.
- Applications for four professional research permits and three avocational permits have been received in 2004. All were granted.
- Reviewing an application takes approximately 30 minutes. Inspecting collected fossils can take some time, depending on the number involved.
- There are no fees for permits.

Impact Assessment

- Where any operation or activity undertaken by a person is likely to alter, damage or destroy heritage property, a person may be required to:
 - Carry out an assessment to determine the effect of the proposed operation or activity on the heritage property.
 - Prepare and submit a report containing the assessment.
 - Undertake any salvage, preservation or protective measures or any other action the minister may specify.

Offence and Penalties

- Any individual who contravenes the Act may be fined upon summary conviction up to \$5,000 and/or to imprisonment for up to six months. A corporation may be fined up to \$250,000.
- No charges have been laid under the Act pertaining to fossils.

5.4 Manitoba

Legislation and Regulation

The Heritage Resources Act, SM, Ch. H39.1, 1986.

Responsibility: Minister of Culture, Heritage and Tourism

Definitions

"Heritage resource" includes

- (a) a heritage site,
- (b) a heritage object, and
- (c) any work or assembly of works of nature or of human endeavour that is of value for its archaeological, palaeontological, pre-historic, historic, cultural, natural, scientific or aesthetic features, and may be in the form of sites or objects or a combination thereof.

"Heritage object" includes

- (a) an archaeological object,
- (b) a palaeontological object,
- (c) a natural heritage object, and

(d) an object designated as a heritage object by the Lieutenant Governor in Council.

"Natural heritage object" means a work of nature consisting of or containing evidence of flora or fauna or geological processes.

"Palaeontological object" means the remains or fossil or other object indicating the existence of extinct or prehistoric animals, but does not include human remains.

Aspects of the Legislation and Regulation Pertaining to Fossil Management

Jurisdiction for Fossil Management and Protection

- Fossils are under the jurisdiction of *The Heritage Resources Act* and are recognized in the definitions of “heritage resource”, “heritage object”, “natural heritage object” and “palaeontological object”.
- Fossils are not minerals.
- The minister may designate any site as a heritage site if the minister is satisfied that the site represents, either by itself or by reason of heritage resources, an important feature of the natural history of the province or a specific locality within the province.
- Fossil sites are also protected when located within provincial parks.

Ownership and Custody

- All heritage objects, including fossils, are owned by the Crown in the right of Manitoba since *The Heritage Resources Act* was proclaimed on May 12, 1986. This ensures that the province has the appropriate authority and ability to preserve and protect heritage objects for the benefit of Manitobans.
- A person or municipality, who pursuant to earlier legislation was the owner of a heritage object prior to *The Historic Resources Act* coming into force, continues to be the owner and has possession of the object.
- The Act recognizes that amateur collectors play an important role in providing knowledge about the province’s natural and cultural history by providing the collectors with custody of newly-found heritage objects such as fossils.
- Anyone who finds a fossil or what may be a fossil is required to report the finding to the minister or the agency administering *The Historic Resources Act*.
- Where a fossil is found on or under, Crown land or municipal land (including submerged land), unless the minister excludes such land by regulation, the fossil remains in custody of the finder.
- Where a fossil is found on private land by a person other than the landowner, custody of the fossil is retained by the owner of the land. The finder may acquire custody of the fossil with the approval of the landowner.
- A person who retains custody of a fossil is deemed to be holding the fossil in trust for the Crown. The minister may enter into a formal agreement with a person having custody of a fossil regarding the care, conservation and protection of the fossil.

- Custody of the fossils can be transferred to another person at any time and, upon the death of the custodian, will pass to the heirs, executors or administrators who hold the fossils in trust for the province.
- The minister may, by order, waive any Crown right of ownership in a heritage object.

Collecting and Permits

- A heritage permit is required to search for or excavate for fossils and other heritage objects. “Excavate” is not defined in the Act.
- No person may remove or export fossils from the province without a heritage permit. Fossils may not be sold unless the minister has waived Crown ownership rights.
- Heritage permits for fossils are issued to professional researchers from within and outside of the province, provincial institutions and educators and serious amateur palaeontologists.
- Permits for commercial collecting are not issued. The province has decided not to enter into such agreements for fossils until such time as it can be determined which specific fossils or classes of fossils may be disposed of without duly compromising Manitoba’s fossil heritage.
- A provincially designated heritage site cannot be damaged, destroyed, removed, repaired or developed without a heritage permit.

Advisory Committee

- The Manitoba Heritage Council is established under *The Historic Resources Act* to advise the minister on any matter relating to the Act or its administration.

Administration

- Applications for heritage permits are made to the Historic Resources Branch. The Branch contacts palaeontologists at the Manitoba Museum or provincial universities for expert advice on applications.
- Seven palaeontological heritage permits have been issued in 2004. Heritage permits for palaeontological investigations make up about 10 per cent of the total number of permits issued annually.
- No fee is charged for obtaining a heritage permit.
- A register is maintained of all fossils deemed to be significant to the province. The register includes the present location of the fossil and where it was discovered, a description of the fossil and an explanation of its heritage significance, the date of discovery and the name and address of the owner and of the discoverer. The registrar is available to the public.

Impact Assessment

- A heritage resource impact assessment may be required for any work, activity, development or project that is likely to damage or destroy any heritage resources (i.e. fossils) that may be on, in or beneath the site.

- A heritage resource impact assessment is required for any work, activity, development or project on a designated heritage site or a site where a notice of intent to designate the site has been issued.

Offence and Penalties

- A person who contravenes the Act, upon summary conviction, may be fined up to \$5000 for each day the offence continues. A corporation may be fined upon summary conviction up to \$50,000 for each day the offence continues.
- A person or corporation convicted of an offence where damage resulted to a heritage resource, in addition to any fine imposed, may be required to pay for the repair, restoration or reconstruction of the heritage resource.
- No legal proceedings have been initiated with regards to fossil heritage objects.

5.5 Ontario

Legislation and Regulation

Heritage Act, RSO, 1990, Ch. O.18

Cultural Heritage Resource Strategy 1990

Responsibility: Minister of Culture

Mining Act, RSO, 1990, Ch. M.14

Mineral Collecting Policy L.P. 701-1 (July 24, 1997)

Responsibility: Minister of Northern Development and Mines

Definition

Mining Act

“Mineral” means all naturally occurring metallic and non-metallic minerals, including natural gas, petroleum, coal salt, quarry and pit material, gold, silver and all rare and precious metals, but does not include sand, gravel and peat.”

Mineral Collecting Policy – this policy also applies to fossil collecting. The terms mineral collecting and fossil collecting are interchangeable.

“Hobby mineral collecting” means:

- Collecting for personal pleasure, recreation or interest, and
- The amount collected is below the threshold limit, and
- The samples are collected for the collector’s personal collection, and the collector has no intention to sell the minerals collected. Swapping minerals collected as part of hobby collecting is acceptable. This recognizes that swapping is part of a personal collection.”

“Large scale mineral collecting (Commercial collecting)” means:

- Mineral collecting or extraction of minerals with the intention of selling, or
- The amount of mineral collected is above the threshold limit, or the collection is done with the use of mechanical equipment: plugger, dynamite, backhoe, mechanical or power equipment.”

“Threshold limit” means what a person can excavate with hand tools only and can carry unassisted from a specific site or location. The limit is allowed once per year per site.”

Aggregate Resources Act, RSO, 1990, Ch. A.8
Responsibility: Minister of Natural Resources

Definition

“Aggregate” means gravel, sand, clay, earth, shale, stone, limestone, dolostone, sandstone, marble, granite, rock or other prescribed material.

Aspects of the Legislation and Regulations Pertaining to Fossil Management

Jurisdiction for Fossil Management and Protection

- The *Heritage Act* only applies to cultural heritage – historical buildings and sites and archaeological sites and objects. The Act does not apply to natural heritage such as fossils and fossil sites. Fossil sites can not be protected under the Act.
- Although fossils are not covered by the *Heritage Act* at this time, the Ministry of Culture recognizes fossils as heritage in their Cultural Heritage Resources Strategy 1990 as an example of “tangible heritage”.
“Heritage encompasses such intangible elements as the traditions, values and beliefs of Ontario’s diverse population and such tangible elements as works of art, photographs, fossils, and the place in which we work and live – our buildings, towns and landscapes.”
- The Ministry of Culture is interested in what is happening in other jurisdictions regarding fossil management and how it could relate to Ontario.
- The *Mining Act* does not directly refer to fossils in the definition. There is no specific authorization to remove minerals or fossils as part of a hobby collection.
- The extraction or removal of minerals is subject to mining lease under the *Mining Act* and the extraction or removal of aggregate is subject to the *Aggregate Resources Act*.
- Mineral and fossil collecting in Ontario is a privilege offered by the province and is not a right. The Ministry of Northern Development and Mines recognizes collecting for its recreational and educational benefits to the public. The Ministry allows mineral and fossil collecting under conditions specified in the Mineral Collecting Policy.
- Fossil sites can be protected through initiatives of the Ontario Living Legacy program under the Ministry of Natural Resources. Fossil sites can be protected within provincial parks or through partnerships with municipal governments. For example, the 2003 partnership acquisition of 3.7 hectares of waterfront property at Nottawasaga Bay by the Ministry of Natural Resources and the Town of the Blue Mountain resulted in a municipal park noteworthy for its abundance of well-preserved, 425 million year old fossils.

Ownership

- Ownership of resources, including fossils, on Crown land are property of the Crown in the right of Ontario.
- Fossils on private land are the property of the landowner, although, this may be subject to mining laws in certain cases.

Collecting and Permits:

- Hobby collecting is allowed within threshold limits. The requirements of the *Mining Act* and the *Aggregate Resources Act* are not generally enforced against hobby collectors.
- Hobby collecting is not allowed on private land without the permission of the land owner, nor on Crown land where there are unsafe or hazardous conditions. Collecting is also not allowed in Indian Reserves, in provincial or federal parks, or land reserved from mineral staking, sale or lease.
- Hobby collecting is subject to and must not interfere with other existing rights or interests on Crown land.
- Institutional collecting for educational use, displays in museums or other public places or for use in scientific research is subject to the Mineral Collecting Policy. The level of activity would determine whether institutional collecting would be treated as hobby collecting or large scale/commercial collecting.
- Large scale or commercial collecting requires a lease under the *Mining Act* or a permit under the *Aggregate Resources Act*. Certain provisions of the *Public Lands Act* are enforced where applicable.

Administration

- No specific information is available since permits are not generally required for hobby collecting and institutional collecting. Large scale or commercial collecting is administered by a mining lease or an aggregate permit.

Impact Assessment

- Hobby collectors are subject to all environmental protection laws that are applicable to a prospector's licence holder.
- Large scale or commercial collecting is subject to the environmental laws applicable to mining development or aggregate development.

Offence and Penalties

- Contravention of the *Mining Act*, upon conviction, is subject to a fine of not more than \$10,000.
- Contravention of the *Aggregate Resources Act*, upon conviction, is subject to a fine of not less than \$500 and not more than \$30,000 for each day the offence occurs or continues.

5.6 Quebec

Legislation and Regulation

Cultural Property Act, R.S.Q., Ch. B-4

Responsibility: Minister of Culture and Communications

Mining Act, R.S.Q., Ch. M-13.1

Responsibility: Minister of Natural Resources, Wildlife and Parks

Definition

“Mineral substances” means natural substances in solid, gaseous or liquid form, except water and fossilized organic matter.

Natural Heritage Conservation Act, R.S.Q., Ch. C-61.0

Responsibility: Minister of Environment

Definition

“Nature reserve” means land under private ownership recognized as a nature reserve because it has significant biological, ecological, wildlife, floristic, geological, and geomorphic or landscape features that warrant preservation.”

Aspects of the Legislation and Regulation Pertaining to Fossil Management

Jurisdiction for Fossil Management and Protection

- The *Cultural Property Act* applies to historical property and sites and archaeological property and sites. It does not appear to apply to fossil management.
- The definition of “mineral substances” under the *Mining Act* excludes “fossilized organic matter”. Fossils are not minerals.
- The definition of “nature reserve” under the *Natural Heritage Conservation Act* includes “geological” features. This Act could potentially be used to protect fossil sites. Fossil sites can be protected within provincial parks.
- It is not clear how or if fossils are managed in Quebec. No further information is provided.

5.7 Newfoundland and Labrador

Legislation and Regulations

Historic Resources Act, RSNL, 1990, Ch. H-4

Responsibility: Minister of Tourism, Culture and Recreation

Definition

"Fossil" includes constructs and other structures that contain or are evidence of prehistoric organisms.

"Palaeontological investigation" means an investigation carried out in the province by way of survey, examination or otherwise for the purpose of discovering a significant fossil in the province and that investigation may or may not require the removal of rock or a significant fossil found in, on or partly in land in the province.

"Palaeontological resource" means a construct, structure or work of nature consisting of or being evidence of prehistoric multicellular organisms and palaeontological resources that are designated by regulation;

"Provincial cultural property" means an historic or palaeontological resource that is the subject of a declaration under section 14.

"Significant fossil" means a fossil originating in the province and consisting of or containing evidence of a pre-historic organism that is of exceptional scientific or commercial value as designated in accordance with the regulations.

"Significant palaeontological site" means an area of land that is the subject of a declaration under section 16.1."

Aspects of the Legislation and Regulations Pertaining to Fossil Management:

Jurisdiction for Fossil Management and Protection

- Fossils are under the jurisdiction of the *Historic Resources Act* and are specifically defined in the Act.
- Fossils are not managed as minerals.
- A Bill to amend the *Historic Resources Act* has been drafted along with a draft Palaeontological Resources Regulation. The draft Bill and regulation are intended to strengthen the provisions of the Act regarding fossil management. Regulations are required to implement sections of the Act relative to a "palaeontological resource" and "significant fossil".
- A palaeontological resource may be protected by declaration to be a provincial cultural property. An area of land in the province considered to be of palaeontological significance may be declared by regulation to be a significant palaeontological site. A provincial cultural property and a significant palaeontological site are registered in a Provincial Registry of Historic Resources.
- The *Wilderness and Ecological Reserves Act* was used in 2003 to give protection to a unique site containing 560 million year old fossils representing some of the earliest life forms on earth. Fossils may also be protected within a provincial park.

Ownership

- All significant fossils found with the province are property of the Crown.
- Any person who finds a significant fossil must report it to the minister immediately stating the nature of the fossil, its location and the date of discovery.
- When a person who possess a significant fossil dies, the person responsible for the administration of the deceased person's estate shall immediately deliver the fossil into the possession of the Crown.

Collecting and Permits

- No person shall engage in a commercial trade, activity, sale or export of a palaeontological resource without the written permission of the minister.

- The collection of a common palaeontological resource that is not a significant fossil is permitted provided that there is no commercial trade, activity, sale or export of that resource.
- Palaeontological investigation permits are normally issued to qualified professional researchers.

Administration

- Two research permits have been issued to scientific researchers.
- Fees do not appear to be charged for permits.

Impact Assessment

- Where in the opinion of the minister, a person undertaking an operation or activity will or is likely to alter, damage, destroy or otherwise adversely affect palaeontological resources, the minister may order the person to:
 - Carry out an assessment to determine the effects of the proposed operation or activity on the palaeontological resources.
 - Prepare and submit a report containing the assessment.
 - Undertake preservative or protective measures or other action the minister considers necessary.

Offence and Penalties

- A person who contravenes the *Historic Resources Act* may be fined upon summary conviction up to \$50,000 and/or to imprisonment for up to one year. Each continuance of the contravention for a day or part of a day constitutes a separate offence.

5.8 New Brunswick

Legislation and Regulation

Historic Sites Protection Act, RSNB, 2000, Ch. H-6

Cultural Policy for New Brunswick 2002

Responsibility: Minister responsible for the Culture and Sport Secretariat

Definitions

“Anthropological object” means an object of anthropological significance found at an anthropological site.

"Anthropological site" means any site, parcel of land, building, or structure of anthropological significance that has been designated as such by the Minister.

"Archaeological field research" means explorations, surveys or excavations carried out for the purpose of obtaining information of an archaeological nature or with the intention of recovering objects of archaeological significance.

"Historic object" means an object of historical significance found at an historic site.

"Historic site" means any site, parcel of land, building, or structure of historical significance that has been designated as such by the Minister.

Mining Act, RSNB, 2000, Ch. M-14.1

Mineral Resource Policy for New Brunswick 1993

Definition

"Mineral" means any natural, solid, inorganic or fossilized organic substance and such other substances as are prescribed by regulation to be minerals, but does not include

- (a) sand, gravel, ordinary stone, clay or soil unless it is to be used for its chemical or special physical properties, or both, or where it is taken for contained minerals,
- (b) ordinary stone used for building or construction,
- (c) peat or peat moss,
- (d) bituminous shale, oil shale, albertite or intimately associated substances or products derived therefrom,
- (e) oil or natural gas, or
- (f) such other substances as are prescribed by regulation not to be minerals.

Protected Natural Areas Act, RSNB, 2000, Ch. P-19.01

Responsibility: Minister of Natural Resources

Definition

"Protected natural area" means a protected natural area established under this Act.

Aspects of the Legislation and Regulation Pertaining to Fossil Management

Jurisdiction for Fossil Management and Protection

- The *Historic Sites Protection Act* only applies to anthropological, archaeological and historical objects and sites. Fossil are not included in any of the definitions under the Act. The Cultural Policy for New Brunswick 2002 also focuses on anthropological, archaeological and historical heritage, and unlike the Ontario Cultural Heritage Resource Strategy, does not recognize fossils as an example of "tangible heritage".
- New Brunswick is considering amendments to their heritage legislation that could apply to fossil management. They are examining models in other jurisdictions, particularly in Nova Scotia and Newfoundland and Labrador due to similarities in size and geology.
- Fossils appear to be included as minerals in New Brunswick. The definition of "mineral" in the *Mining Act* includes "fossilized organic substance". The definition of mineral also provides for substances to be prescribed "not to be minerals". This is similar to the provisions in the British Columbia *Mineral Tenure Act* which also provides for substances to be designated as "minerals".

- No information was found to suggest that fossils are actively managed as minerals in New Brunswick. The Mineral Resource Policy for New Brunswick 1993 does not discuss fossils.
- Fossil sites can be protected under the *Protected Natural Areas Act* as protected natural areas can be established to protect, conserve and manage lands that contain unique or rare examples of geological phenomena. Fossil sites can also be protected within provincial parks.

Ownership

- All minerals in the province are own by the Crown in the right of New Brunswick. All resources on Crown land are owned by New Brunswick.
- It is of interest to note that the only specific mention of “fossils” in New Brunswick legislation is in the *Assessment Act* and excludes fossils from the definition of “real property”.

Collecting and Permits

- Fossil collecting for any purpose appears to be largely unregulated in New Brunswick. Mining leases would be required for the commercial mining of fossils.
- Permits are required for scientific research and educational activities in protected natural areas and similar permits would be required in provincial parks.

Administration

- No information available.

Impact Assessment

- No information available.

Offence and Penalties

- Depending on the nature of the offence, contravention of the *Mining Act*, a person may be fined up to \$1000 and, if in default of payment, to imprisonment under the *Summary Convictions Act*. A corporation may be fined up to \$10,000 and, if in default of payment, to levy by distress and sale under the *Summary Convictions Act*.
- Depending on the nature of the offence, contravention of the *Protected Natural Areas Act*, a person upon conviction may be subject to fines ranging from \$100 to \$100,000 and/or imprisonment for up to 6 months. A corporation upon conviction of an offence may be fined not less than \$5000 and not more than \$1,000,000.

5.9 Prince Edward Island

Heritage Places Protection Act, RSPEI, 1988, Ch. H-3.1

A Cultural Policy for Prince Edward Island (undated)

Responsibility: Minister for Community and Cultural Affairs

Definitions

“Heritage place” means a place in the province which includes or is comprised of an historic resource of an immovable nature.

“Historic resource” means any work of nature or of man that is primarily of value for its palaeontological, archaeological, prehistoric, historic, cultural, natural, scientific or aesthetic interest.

Mineral Resources Act, RSPEI. 1988, Ch. M-7

Responsibility: Minister of Environment and Energy

Definition

“Claim” means mineral claims.

“Mineral” means any natural solid inorganic or fossilized organic substance and such other substance as is declared to be a mineral under section 3, but does not include

- (i) ordinary stone, building or construction stone,
- (ii) sand, gravel, peat, peat moss or ordinary soil,
- (iii) gypsum or limestone,
- (iv) oil or natural gas, or
- (v) bituminous shale, oil shale or intimately associated products or substances derived therefrom.”

“Mineral right” means a licence, or lease or special licence issued under this Act, or right granted under section 18.”

Natural Areas Protection Act, RSPEI. 1988, Ch. N-2

Responsibility: Minister of Environment and Energy

Definition

“Natural area” means (in part) a parcel of land designated as such under section 3 that contains unusual botanical, zoological, geological, morphological or palaeontological features and provides opportunities for scientific and educational programs in aspects of the natural environment.

Aspects of the Legislation and Regulation Pertaining to Fossil Management

Jurisdiction for Fossil Management and Protection

- Fossils are recognized for their palaeontological value under the definition of “historic resource” in the *Heritage Places Protection Act*. Heritage places containing historic resources of an immovable nature may be designated as heritage sites. The designation provides protection for the historic resources within the designated sites. No protection is provided to fossils or other historic

resources except in a designated site. This provision is similar to that found in the British Columbia *Heritage Conservation Act*.

- The Cultural Policy for Prince Edward Island, while not specifically mentioning fossils, recognizes that the context of heritage extends to the natural environment. Heritage includes individuals and organizations, who identify, collect, store, conserve, preserve, study, interpret, exhibit, communicate and provide access to heritage materials and experiences. These include tangible items such as natural resources.
- Fossils appear to be included as minerals in Prince Edward Island. The definition of “mineral” in the *Mineral Resources Act* includes “fossilized organic substance”. The Act also provides for any substance formed by the processes of nature occurring on or under the surface of the earth to be declared “to be a mineral”. The Act does not contain the opposite provision to declare a substance “not to be a mineral”. In the British Columbia under the *Mineral Tenure Act*, a substance may be designated to be either “a mineral” or “not a mineral”.
- Under the *Mineral Resources Act*, the minister may restrict mineral rights in the province to claims in respect of particular minerals. The minister may also withdraw lands in the province from application for a licence in respect of all or particular minerals. These provisions are similar to the use of mineral reserves in British Columbia that have been used to exclude fossils from mineral claims.
- No information was found to suggest that fossils are actively managed as minerals in Prince Edward Island.
- Fossil sites may be protected under the *Natural Areas Protection Act* if designated as a natural area. The minister may designate land as a natural area if it is Crown land, where an agreement has been reached with a private landowner to purchase or lease the land or where a private landowner has registered a restrictive covenant for the land. Information was not available as to whether the Act had been used specifically for the purpose of protecting fossils.
- Fossil sites may also be protected within provincial parks established under the *Recreation Development Act*.

Ownership

- All minerals in the province are owned by the Crown in the right of Prince Edward Island.

Collecting and Permits

- Fossil collecting appears to be largely unregulated outside of designated heritage sites, designated natural areas or provincial parks. Permits are required to collect fossils in these protected areas.
- Commercial extraction of fossils as a mineral would require mining licences and leases.

Administration

- No information available.

Impact Assessment

- A heritage impact statement under the *Heritage Places Protection Act* may be required of any person proposing development that may adversely affect a designated heritage site, structure or area.

Offence and Penalties

- An individual who contravenes the *Heritage Places Protection Act*, upon summary conviction, may be fined an amount not exceeding \$20,000. A corporation convicted of an offence may be fined a maximum of \$100,000.
- A person who contravenes the *Mineral Resources Act* and where no specific penalty is provided in the Act, upon summary conviction, may be fined up to \$1000.
- A person who contravenes the *Natural Areas Protection Act*, upon summary conviction, may be fined up to \$1000.

5.10 Nova Scotia

Legislation and Regulation

Special Places Protection Act, RSNS, 1989, Ch. 438

Responsibility: Minister of Tourism and Culture

Definition

“Heritage object” means an archaeological, historical or palaeontological object or remain but does not include such an object to which the *Treasure Trove Act* applies.

“Special places” means (in part) those places that provide for the preservation, protection, regulation, exploration, excavation, acquisition and study of archaeological and historical remains and palaeontological sites which are considered important parts of the natural or human heritage of the Province.

Mineral Resources Act, RSNS, 1990, Ch. 18

Responsibility: Minister of Natural Resources

Definition

“Mineral” means a natural solid inorganic or fossilized organic substance and a substance prescribed to be a mineral, but does not include

- (i) ordinary stone, building stone or construction stone,
- (ii) sand, gravel, peat, peat moss or ordinary soil,
- (iii) gypsum,
- (iv) limestone, except that which is vested in the Crown, and
- (v) oil or natural gas,

unless declared to be a mineral by the Governor in Council.

Aspects of Legislation and Regulation Pertaining to Fossil Management

Jurisdiction for Fossil Management and Protection

- The *Special Places Protection Act* provides clear authority for fossil jurisdiction and management. Any land in the province that has outstanding palaeontological significance may be designated as a protected site. The Joggins Fossil Cliffs and the Parrsboro Fossil Cliffs are examples of fossil sites protected under the Act.
- Fossil sites are also protected within provincial parks such as the Arisaig Provincial Park where 400 million year old marine fossils commonly erode from beach cliffs.
- In 1995, under the leadership of the Nova Scotia Museum and in consultation with a variety of stakeholders, a vision statement for fossil resource management was produced entitled “Towards a Learning Culture –The Vision for Fossil Resource Management in Nova Scotia”. The vision statement outlined 10 strategic goals with guiding principles and proposed projects for fulfilling the strategic goals. The work to fulfill the strategic goals is continuing in Nova Scotia. The 10 strategic goals are:
 1. To preserve scientifically important fossils and make them accessible for study in Nova Scotia.
 2. To ensure that the Province retains ownership of significant fossils.
 3. To encourage communication and information exchange between all users of the fossil resource.
 4. To develop Heritage Research Permit categories and associated guidelines for all fossil collectors.
 5. To communicate fossil-related information for the education and enjoyment of students, tourists and other users of the resource.
 6. To allow regulated fossil collecting for commercial purposes.
 7. To ensure that fossils excavated from bedrock are removed only by people working under provincial permits.
 8. To ensure that the rights of landowners are respected by users of the fossil resource.
 9. To establish a community-based approach for designating and managing areas of palaeontological significance.
 10. To ensure the Nova Scotia Museum will take the lead in making fossils accessible for viewing by the general public.
- In 2002, Nova Scotia became the first province to declare a provincial fossil under the *Provincial Fossil Act* as an official symbol of the province. The provincial fossil, *Hylonomus lyelli*, is one of the oldest known reptiles in the world dating back 315 million years. The British Columbia Palaeontological Alliance has proposed that British Columbia also designate a provincial fossil to commemorate its fossil resources.
- Although the *Mineral Resources Act* contains within the definition of mineral the words “fossilized organic substance”, it would appear clear from the wording of the *Special Places Protection Act* that fossils are managed as a heritage resource rather than as a mineral in Nova Scotia.

Ownership

- The vision statement for fossil management states “Fossils are considered a common property resource – they belong to the people of the province”. Fossils on Crown land would be owned by the Crown in the right of Nova Scotia. The *Special Places Protection Act* is not clear regarding the ownership of fossils or other heritage objects on private land.
- The province does not want to possess every fossil discovered in the province. Strategic goal #2 in the vision statement was “to ensure the province retains ownership of significant fossils”.
- Where a heritage object has been recovered from any site in the Province by a person who is not a holder of a permit or by a permit holder in contravention of the permit, the minister may seize the heritage object and deliver it to the Museum, which object becomes the property of the Province.

Collecting and Permits

- A heritage research permit is required to extract or remove fossils from any lands in the province. Permission from landowners is also required on private lands.
- At this time, heritage research permits for excavations are only issued to qualified researcher with proper research designs.
- Permits for “casual” collecting of loose, surface fossils and commercial permits will be considered in the future. While the province encourages people to pick up loose beach fossils before they are destroyed by the tides, people are also encouraged to bring the fossils to the Nova Scotia Museum to ensure that any important fossils are added to the provincial collections.

Advisory Committee

- The *Special Places Protection Act* establishes a committee known as the Advisory Committee on the Protection of Special Places.
- The Committee is composed of the director of the Nova Scotia Museum and ten other members appointed by recommendation of the Minister and who are government representatives for the departments of Education, Environment, Land and Forests and Mines and Energy, a representative of the Union of Nova Scotia Indians, and other representatives from public or private agencies.
- The committee makes recommendations to the Minister concerning the administration, classification and acquisition of special places. The committee can perform research and recommend regulations to the minister among other duties.

Administration

- Applications for heritage research permits are reviewed by Nova Scotia Museum staff and approved by the executive director.
- Eight to ten heritage research permits are issued annually.
- Three to four people are involved in the permit process. It takes approximately three to four hours to process a permit.
- No fees are charged for a heritage research permit at this time.

Impact Assessment

- When in the opinion of the minister, any special place whether designated or not is threatened with destruction by reason of commercial, industrial or other development or activity, may issue a stop order for the development or activity for 30 days. The Governor in Council may continue the order until a site survey and, if necessary, a site investigation and salvage is carried out under the direction of the Nova Scotia Museum.
- When such development or activity is carried out by a government department or agency or a developer, the Governor in Council that the party provide funds for the site survey, investigation and salvage.

Offence and Penalties

- A person who contravenes the *Special Places Protection Act* or the terms and conditions of a permit issued under the Act, upon summary conviction, may be fined up to \$10,000. A corporation, upon summary conviction, may be fined up to \$100,000.

5.11 Yukon

Legislation and Regulation

Historic Resources Act, RSY, 2002, Ch. 109

Responsibility: Minister for Tourism and Culture

Definition

“Historic object” means (in part) a palaeontological object that has been abandoned.

“Historic resource” includes a historic object and any work or assembly of works of nature or of human endeavour that is of value for its archaeological, palaeontological, pre-historic, historic, scientific or aesthetic features.

“Historic site” means a site designated as a historic site.

“Palaeontological object” does not include human remains but does refer to the remains or a fossil or other object that indicates the existence of extinct or prehistoric plants or animals that

- a) is of value for its historic or palaeontological significance, and
- b) is or has been discovered on or beneath submerged land in the Yukon, or is or has been submerged or partially submerged beneath the surface of any watercourse or permanent body of water in the Yukon.

Aspects of the Legislation and Regulation Pertaining to Fossil Management

Jurisdiction for Fossil Management and Protection

- Fossils are managed as historical/heritage resources under the *Historic Resources Act* and are clearly defined within the Act as “historic objects” and “palaeontological objects”.

- Fossil sites may be protected through designation under the Act. Protection is also extended to sites where notice of intended designation has been given.
- An inventory of historic objects that are in the opinion of the minister to be significant representations of historic resources of the Yukon.
- A person finding an object that is or is likely to be a historic object is required to report the find to the minister.

Ownership

- Ownership of fossils, upon coming into force of the *Historic Resources Act*, is vested in the right of the Government of the Yukon.
- Prior to the Act coming into force, a person who owned fossils continues to own it and to have the right of possession provided the person registers the fossils with the minister within three years of the Act coming into force. If the person did not register the fossils within the required timeframe, the minister may serve notice on the person that ownership vests with the government.
- After the coming into force of the Act, the finder of fossils on public land or the owner of private land where fossils were found may retain the fossils in custody.
- A person who retains custody of fossils is deemed to be holding the fossils in trust for the government and the minister may:
 - leave the fossils in the person's custody;
 - make an agreement with the person respecting the protection of the fossils and other terms and conditions agreed to by the person and the minister; or
 - require the person deliver the fossils to the minister.
- A person retaining custody of fossils may transfer them in custody to another person at any time and, upon death, pass them in custody to the heirs, executors or administrators of the person. The fossils in custody continue to be held in trust for the government.
- The minister may at any time waive government's right of ownership for fossils held in custody by a person.
- The ownership of fossils found on settlement land after the Act came into force is vested in the Yukon First Nation whose land the settlement land is.

Collecting and Permits

- A historic resources permit is required to search or excavate for fossils.
- Fossils may not be removed from the Yukon, whether or not the person owns it, without a historic resource permit.
- Fossils may not be altered or destroyed, whether or not the person owns it, except in accordance with a historic resource permit.
- Any work on a designated historic site requires a historic resources permit.
- If fossils are found on settlement land, a historic resources permit may not be issued without the written consent of the Yukon First Nation which governs the settlement land.

Advisory Committee

- The Act establishes the Yukon Heritage Resources Board consisting of 10 members appointed by the minister and at least half shall be chosen by Yukon First Nations.
- The Board advises the minister on appropriate guidelines and policies, the designations of historic sites or on other relevant to the Act.

Administration

- Information not available.

Impact Assessment

- No specific requirements in the Act other than the requirement for historic resource permits to undertake work on a designated historic site.

Offence and Penalties

- A person who contravenes the Act may, upon summary conviction, be fined up to \$50,000 and/or subject to six months imprisonment.
- A corporation who contravenes the Act many, upon summary conviction, be fined up to \$1,000,000.

5.12 Northwest Territories and Nunavut

Legislation and Regulation

Historical Resources Act,

Responsibility: Minister for Education, Culture and Employment

Definition

Not applicable to fossils.

Aspects of the Legislation and Regulation Pertaining to Fossil Management

Jurisdiction for Fossil Management and Protection

- The *Historic Resource Act* is for the purpose of establishing a Northwest Territories Historical Board rather than for the management of historical or heritage resources.
- In the Northwest Territories, fossils appear to fall under broad definition of mineral in the federal Canada Mining Regulations, *Territorial Lands Act* under the Justice Canada.
- There does not appear to be any particular management of fossils in the Northwest Territories.

5.13 Government of Canada

Legislation and Regulation

Cultural Property Export and Import Act, RS 1985, Ch. C-51

Canadian Cultural Property Export Control List

Responsibility: Minister of Canadian Heritage

Definition

“Fossil” means the preserved remains or traces of animals or plants that lived in the geological past but does not include

- a) fossil fuels or fossiliferous rock intended for industrial use, or
- b) the carving or sculpture made by a person or persons from fossiliferous or fossilized matter.

Aspects of the Legislation and Regulation Pertaining to Fossil Management

Jurisdiction for Fossil Export from Canada

- The export of cultural property which includes fossils is controlled through the *Cultural Property Export and Import Act*. The Act provide for the Governor General by order to establish a Canadian Cultural Property Export Control list. The purpose of the control list is to control the export of objects or classes of objects deemed necessary in order to preserve the national heritage of Canada. Objects on the control list are subject to export permit requirements.
- Under Palaeontology, the control lists the following:
Palaeontological specimens recovered from the soil of Canada, the territorial sea of Canada or the inland or other internal waters of Canada, as follows:
 - (a) a type fossil specimen of any value;
 - (b) fossil amber of any value;
 - (c) a vertebrate fossil specimen of a fair market value in Canada of more than \$500;
 - (d) an invertebrate fossil specimen of a fair market value in Canada of more than \$500;
 - (e) specimens in bulk weighing 11.25 kg (25 pounds) or more of vertebrate fossils or vertebrate trace fossils of any value; and
 - (f) specimens in bulk weighing 22.5 kg (50 pounds) or more, recovered from a specific outcrop, quarry or locality, that include one or more specimens of any value of the following, namely,
 - (i) invertebrate fossils,
 - (ii) plant fossils, or
 - (iii) fossiliferous rock containing plant fossils or invertebrate fossils.

Permits

- The following is a outline of the procedures to export fossils:
 - An applicant applies to a permit officer for an export permit.
 - If the objects to be exported are or might be on the control list, the application is referred to an expert examiner for consideration.
 - The expert examiner determines if the objects are on the control lists and:
 - whether the objects to be exported are of outstanding significance to Canada; and
 - whether the objects are of such a degree of national importance that its loss to Canada would significantly diminish the national heritage.

- The expert examiner recommends if the permit should be issued or refused. If the recommendation is refusal, the expert examiner must give reasons.
 - When an application is recommended for refusal, the permit officer notifies the applicant and provides the expert examiner's reasons.
 - The applicant may appeal the refusal to a review board appointed under the Act. The review board may override the expert examiner's recommendation, in which case, the export permit is issued.
 - If the review board upholds the expert examiner's recommendation, the issuance of an export permit is delayed, but not necessarily refused. Canadian institutions are notified of the objects and given an opportunity to purchase the objects from the applicant. If the objects are not purchased, the export permit is issued.
- The above procedures may not allow for an adequate review of fossil materials by the expert examiner. The documentation for the objects may be inadequate to determine whether the fossils are significant. The export application may simply list a number of leaf, fish or insect fossils without any scientific identity or information from where they were collected. A few photographs may accompany the application, but there is not opportunity for the expert examiner to physically examine the fossils.
 - There is no real opportunity to refuse an export permit. If a Canadian institution is not able or willing to purchase the fossils, an export permit is issued regardless of the significance of the specimens.
 - British Columbia should consider entering into a protocol agreement with Canada to provide provincial input and approval for fossils from British Columbia to be exported from Canada.
 - There are two recent cases involving applications to export British Columbia fossils. In one case where the expert examiner recommended refusal, the review board overturned the recommendation and the export permit was issued. In the other case, the review board upheld the expert examiner's recommendation for refusal, but a Canadian institution had to purchase the fossils to prevent their export.

Offence and Penalties

- A person who contravenes the Act may be fined, upon summary conviction, up to \$5000 and/or imprisonment up to twelve months.
- A person may be fined, upon conviction by indictment, to a fine up to \$25,000 and/or imprisonment up to five years.
- An officer, director or agent of a corporation who commits an offence may also be subject to the above penalties.

6.0 UNITED STATES

6.1 Federal Government

Unlike Canada, the United States federal government plays a major role in public land management. Public lands are largely administered through the Department of the

Interior by the Bureau of Land Management, Bureau of Reclamation, Fish and Wildlife Service and the National Park Service and through the Department of Agriculture by the Forest Service. There are a number of different statutes and regulations administered by the different agencies that recognize fossil protection and management.

Legislation and Regulation

United States Code

Title 16 Conservation

National Parks, Military Parks, Monuments and Seashores Act

Antiquities Act

Historic Sites, Buildings, Objects and Antiquities Act

Organic Act

Title 42 The Public Health and Welfare

National Environmental Policy Act

Title 43 Public Lands

Federal Land Policy and Management Act

Aspects of the Legislation and Regulation Pertaining to Fossil Management

Jurisdiction for Fossil Management and Protection

- Fossils on federal public lands are recognized as non-renewable resources of heritage, scientific and educational value. Fossils are also recognized as “antiquities”, being objects of scientific interest.
- The Bureau of Land Management (BLM) administers 264 million acres of public land and is responsible for authorizing land uses and protecting land resources. The *Federal Land Policy and Management Act* that requires that public lands be managed in a manner that protects the quality of fossil scientific values. The *National Environmental Policy Act* requires that important aspects of natural heritage be protected. The BLM has a staff of palaeontologists has developed an extensive policy program for palaeontological resource management.
- The responsibility of the Bureau of Reclamation (BR) is to manage, develop and protect water and other natural resources, including fossils, on public lands it administers.
- The Fish and Wildlife Service (FWS) conserves, protects and enhances fish and wildlife resources and their habitats. The FWS administers an extensive network of land as part of the National Wildlife Refuge System. Fossils are protected under regulations for national wildlife refuges.
- The Forest Service (FS) is responsible for managing federal forest lands and for protecting and managing other resource values, including fossils, that are important to the natural resource heritage.
- The National Park Service (NPS) maintains a national park system that protects natural resources including fossils. The NPS is required through the *Organic Act* to conserve palaeontological resources in parks so that they are unimpaired for the enjoyment of future generations. The NPS palaeontological resource management policy provides that: “Palaeontological resources, including both organic and mineralized remains in body or trace form, will be protected,

preserved and developed for public enjoyment, interpretation and scientific research in accordance with park management objectives and approved resource management plans.”

The Bureau of Indian Affairs (BIA) has a limited role for fossil management on Indian lands because these lands are not public lands. Indian lands are lands the United States holds in trust. The BIA, as trustee, approves business arrangements with non-tribal parties and an Indian landowner. Approval is based on whether the transaction is of benefit to the Indian landowner. Fossils that have commercial value are a trust resource and the BIA must manage them as a trust resource. The BIA is involved in approving the leases of Indian lands or contractual agreements between Indian landowners and third parties for the extraction of fossils. The criterion for approval is that the arrangements are of economic benefit to the Indian landowner. The arrangements are also subject to evaluation under the *National Environmental Policy Act* and the *National Historic Preservation Act*.

- In the late 1990's, the United States Congress requested the Secretary of the Interior to review federal policy concerning fossils. The agencies in the Department of Interior - Bureau of Land Management, Bureau of Reclamation, Fish and Wildlife Service, Bureau of Indian Affairs, National Park Service and the U. S. Geological Survey - along with the U. S. Forest Service and the Smithsonian Institution participated in the review and prepare a report for the Secretary.
- In 2000, the Secretary of the Interior presented the report “Fossil on Federal & Indian Lands” to Congress. The report did not make recommendations for managing fossil on Indian lands, indicating that this should appropriately be addressed by tribal governments. The report provided seven principles and recommendations for further action to improve the management of fossils on federal public lands.
 - Principle 1: Fossils on Federal Lands are Part of America's Heritage.
Recommendation: Future actions should reaffirm the current use of federal fossils for their scientific, educational and, where appropriate, recreational values.
 - Principle 2: Most Vertebrate Fossils are Rare.
Recommendation: Future actions should reaffirm the restriction of vertebrate fossil collection to qualified personnel, with the fossils remaining in federal ownership in perpetuity.
 - Principle 3: Some Invertebrate and Plant Fossils are Rare.
Recommendation: Future actions should reaffirm mission-specific agency approaches to the management of plant and invertebrate fossils.
 - Principle 4: Penalties for Fossil Theft Should be strengthened.
Recommendation: Future actions should penalize the theft of fossils from federal lands in a way that maximizes the effectiveness of prosecutions and deters future thefts. Penalties should take into account, among other factors, the value of the fossils themselves, as well as any damage resulting from their illegal collection. Future program strategies should emphasize education of federal managers, prosecutors, law enforcement

personnel and the judiciary regarding the value of fossils and the techniques for the appropriate protection of fossil resources.

- Principle 5: Effective Stewardship Requires Accurate Information.
Recommendation: Future actions should acknowledge the need for gathering and analyzing information about where fossils occur, in particular the critical role of inventory in the effective management of fossil resources. Increased emphasis on fossil inventory should take into consideration, where possible, regional approaches across agency lines, using modern technology such as GIS. Such work could also address specific issues, such as the impact of erosion on the loss of resources.
- Principle 6: Federal Fossil Collections Should be Preserved and Available for Research and Public Education.
Recommendation: Future actions should affirm the importance of curating scientifically valuable fossils as federal property, often in partnership with non-federal institutions. Future program approaches should emphasize the use of modern technology to improve curation and access, as well as the sharing of information between and among government agencies and other institutions.
- Principle 7: Federal Fossil Management Should Emphasize Opportunities for Public Involvement.
Recommendation: Future actions should include an emphasis on public education and participation in the stewardship of fossil resources. Future program approaches should emphasize the use of technology to increase public education and awareness of the importance and benefit of fossil resources.
- A Bill was introduced on June 11, 2003, into the House of Representatives to further strengthen the protection of fossils on federal public lands. The Bill, H.R. 2416 Paleontological Resources Preservation Act is proceeding through subcommittee reviews. The Bill appears to address a number of the principles and recommendations contained in the 2000 Report of the Secretary of the Interior to Congress. Congressman James P. McGovern cited the illegal collecting of fossils, often for commercial purposes, from federal lands as a main reason for the Bill.

Ownership

- Fossils on federal public lands are owned by the United States government.
- Fossils on Indian lands are held in trust.

Collecting and Permits

- BLM – Permit required for vertebrate fossils; usually for scientific purposes only. No permit is required for casual, non-commercial collecting of reasonable amounts of invertebrate fossils for personal use; for reasonable amounts of fossil plants for personal use and for up to 25 lbs./day/ person of petrified wood for non-commercial use and not to exceed 250 lbs. per year. Note: Petrified wood is the only fossil that BLM treats as a mineral.
- BOR – A permit is required for the collection of all fossils and for scientific

- purposes only.
- FWS - A Special Use permit is required for the collection of all fossils and for scientific and educational purposes only.
- NPS - A permit is required for the collection of all fossils and for scientific and educational purposes only.
- FS - Permit requirements may vary with different forest units and may depend on the nature of the work from survey and inventory to excavation and collection.

Administration

- The administration of fossil management and the issuance is undertaken by the specific federal land agency.

Impact Assessment

- Impact assessments in regard to resources on federal land are undertaken in accordance with the *National Environmental Policy Act*.

Offence and Penalties

- Varies in accordance with the applicable federal laws.

6.2 State Public Lands and State Fossils

All of the fifty states are not reviewed. Examples of fossil management programs from selected states are described.

A number of states commemorate their fossil heritage by designating a fossil as an official symbol of the state. Thirty-four of the fifty states have official state fossils. Several other states have fossil material such as petrified wood designated as an official state rock or gem.

6.2.1 Florida

Legislation and Regulation

Florida Statutes

Title XLVIII K-20 Education Code

Ch. 1004 *Public Postsecondary Education Act*; Part II: State Universities

1004.56 Florida Museum of Natural History; functions.

1004.57 Vertebrate pale ontological sites and remains; legislative intent and state policy.

1004.575 Program of vertebrate palaeontolo gy within Florida Museum of Natural History.

1004.576 Destruction, purchase, and sale of vertebrate fossils prohibited, exceptions; field investigation permits required; penalty for violation.

104.577 Certain rights of mine or quarry operators and dragline or heavy equipment operators preserved.

Aspects of the Legislation and Regulation Pertaining to Fossil Management

Jurisdiction for Fossil Management and Protection

- The *Public Postsecondary Education Act* assigns responsibility for a Program of Vertebrate Palaeontology to the Florida Museum of Natural History with the intent to protect and preserve the heritage of vertebrate fossils and vertebrate fossil sites in Florida.
- Only vertebrate fossils are regulated in Florida.
- The Museum has the authority to protect vertebrate fossil sites by designating state owned lands, including submerged lands and uplands, or state leased lands or private lands with the landowner's written consent as state "vertebrate palaeontological sites".
- The Act clarifies that in designating vertebrate palaeontological sites, it is not the intent of the Legislature to impede the mining or quarrying for rock, gravel, fill, phosphate and other minerals, or the construction of canals or similar excavations when such activities are permitted by law. Rather, it is the intent of the Legislature that mine and heavy equipment operators be encouraged to cooperate with the state in preserving its vertebrate palaeontological heritage by notifying the Museum whenever vertebrate fossils are discovered and by allowing such fossils to be salvaged.

Ownership

- All vertebrate fossils on state-owned lands, including submerged lands and uplands, belong to the state with title to the fossils vested in the Florida Museum of Natural History.

Collecting and Permits

- A permit is required to collect vertebrate fossils or undertake field investigations on state-owned or leased land or designated vertebrate sites.
- Sharks teeth are excluded from regulation, as are fossil plants and invertebrates. No permit is required to collect these specimens.
- Any person with an interest in Florida vertebrate fossils may apply for a permit.
- A permit must be obtained by:
 - Any person or entity buying , selling or trading vertebrate fossils found on or under state-owned or leased land; and/or
 - Any person or entity engaged in the systematic collection, acquisition, or restoration of vertebrate fossils found on state-owned or leased land.
- An application (online) for a permit, with a copy of a self-identification document (driver's licence, birth certificate, etc.) and a \$5 fee is sent to the Museum.
- A permit is issued for one year. Multiple-user permits may be issued to an individual representing and organization or institution.
- The holder of a permit is required to:
 - Report any unusual specimens or unusually rich site to the Museum as soon as possible; and
 - No later than the end of the permit year, to submit a list of all vertebrate fossils collected during the permit year along with appropriate locality

information; or submit the actual collections with the appropriate locality information.

- If within sixty days of receipt of the list or the actual collection, the Museum does not request the permittee to donate one or more of the fossils collected, the fossils may be released as “non-essential” fossils to be disposed of however the permit holder may choose.

Offence and Penalties

- A person who destroys, defaces, purchases, or sells vertebrate fossils from state-owned or leased lands without a permit to engage in such activity commits a misdemeanour and may be fined up to \$500 and/or imprisoned in the county jail for up to six months. In addition, the person shall forfeit to the state all specimens, objects and materials collected and excavated, together with all photographs and records relating to such materials.
- The Museum may institute a civil action in the appropriate court for the recovery of an unlawfully taken vertebrate fossil.

6.2.2 Utah

Legislation and Regulation

Utah Code

Title 53C *School and Institutional Trust Lands Management Act*

Responsibility: School and Institutional Trust Lands Administration

Definition

"School and institutional trust lands" or "trust lands" means those properties granted by the United States in the Utah Enabling Act to the state in trust, and other lands transferred to the trust, which must be managed for the benefit of:

- (a) the state's public education system; or
- (b) the institutions of the state which are designated by the Utah Enabling Act as beneficiaries of trust lands.

Title 63, Ch. 73 Geological Survey

Responsibility: Department of Natural Resources, Utah Geological Survey

Definition

"Critical paleontological resources" means vertebrate fossils and other exceptional fossils that are designated state pale ontological landmarks as provided for in Section 63-73-16.

"Excavate" means the recovery of critical paleontological resources.

"Paleontological resources" means remains of prehistoric life pertaining to the natural history of the state.

"Specimen" means remains of a critical paleontological nature found on or below the surface of the earth.

Title 65A State Lands

Responsibility: Department of Natural Resources, Division of Forestry, Fire and State Lands

Definition

"Sovereign lands" means those lands lying below the ordinary high water mark of navigable bodies of water at the date of statehood and owned by the state by virtue of its sovereignty.

"State lands" means all lands administered by the division.

Aspects of the Legislation and Regulation Pertaining to Fossil Management

Jurisdiction for Fossil Management and Protection

- Utah state "public lands" fall into two categories. "Trust lands" are administered by the School and Institutional Trust Lands Administration. "State lands" are administered by divisions of the Department of Natural Resources.
- The Trust lands were created by transfer of federal land to Utah at statehood. The Trust lands consist of 3.5 million acres of surface lands and another 1 million acres of subsurface mineral lands. The Trust lands are managed as a trust for 12 beneficiaries specified by the federal government. Each beneficiary institution received distinct lands for their trust. The Public School Trust "owns" about 95% of the Trust lands. The Trust lands may be leased or sold with the revenue returning to the beneficiaries. Income is generated from minerals, grazing, agriculture, and other commercial and industrial uses.
- The State lands are administered by the Division of Forestry, Fire and State lands for multi-resource purposes such as forestry, mining, grazing, recreation, etc.
- Fossils are recognized for their scientific and educational value on Trust lands and on State lands. Significant fossils sites may be designated as palaeontological landmarks on State lands, on Trust Lands with the written consent of the Trust administration and on private lands with the written consent of the landowner.
- Fossil sites may be protected in state parks.
- Fossils discovered on privately owned lands or State lands must be promptly reported to the geological survey.
- The geological survey maintains a register of fossils and fossil sites.

Ownership

- Fossils on Trust lands are owned by the respective beneficiary trust.
- Fossils on State lands are owned by the state of Utah.
- Fossils on private lands are owned by the landowner.

Collecting and Permits

- A rockhound permit is required for recreational collecting on Trust lands. A fee is charged for an annual permit. The fossils may not be sold. Rockhounds may collect up to 25 pounds plus one piece per day and up to a maximum of 250 pounds per year. Rockhounding may not occur in active mining areas or within mineral leases without the permission of the lessee. Commercial collectors must

- follow specific regulations and obtain a mineral lease or materials permit. A right of entry permit is required to undertake investigations for critical palaeontological resources on Trust land. Permits would ordinarily be restricted to qualified researchers. The Trust administration may delegate the authority to issue the excavation permits to the Utah Geological Survey.
- A permit is required to remove critical palaeontological resources on State lands. Permits for palaeontological investigations, excavations and /or collections are issued by the Utah Geological Survey to qualified investigators. The permits may be for surface collecting – area of surface disturbance not greater than 1 square metre at any one location; or for excavation – area of disturbance greater than 1 square metre.
 - Critical palaeontological resources must be placed in a recognized repository or curation facility (i.e. museum). Such specimens collected from State lands may not be removed from the state, prior to placement in a repository or curation facility, without the permission of the geological survey. Specimens collected Trust lands may not be removed from the state, prior to placement in a repository or curation facility, without the permission of the Trust administration in consultation with the geological survey.
 - Fossils collected on State lands may not be sold.

Offence and Penalties

- A person who appropriates, alters, injures or destroys any palaeontological resources on Trust lands or State lands without a permit or in contravention of a permit is guilty of a class B misdemeanour and is liable for damages in the amount of:
 - three times the value of the resource removed, destroyed, or extracted;
 - three times the amount damage committed;
 - three times the value or any losses as a result of interference with other authorized activities; or
 - three times the amount that would have been charged for the use or the land, whichever is greater.
- A person who is convicted of a class B misdemeanour may be imprisoned for up to six months.

6.2.3 Wyoming

Legislation and Regulation

Title 36 *Public Lands Act*

Responsibility: Secretary of State, Office of State Lands and Investments, Board of Land Commissioners.

Definition

“Board” means the board of land commissioners.

“State lands” means all of the lands under the jurisdiction of the board of land commissioners.

Rules and Regulations – Board of Land Commissioners

Ch. 11. State Lands Exclusive Commercial and Non-Exclusive Scientific Fossil Removal Permits.

“Casual or recreational fossil collecting” means the non-commercial collection of invertebrate fossils, which is limited to when they occur as surface litter and do not require any excavation for removal.

“Fossil” means any remains, trace or imprint of a plant or animal that has been preserved in rock or in unconsolidated sediments, excluding fossil fuels and limestones or other calcareous rocks comprised of invertebrate fossils.

“Exclusive commercial fossil removal permit” means a permit issued by the Board to an applicant pursuant to collection of specimens for sale to others.

“Non-exclusive scientific fossil removal permit” means a permit issued by the Board to an applicant pursuant to collection of specimens for the purposes of scientific display, research and education, and not for resale.

“State lands” (for Chapter 11) means all subsurface resource lands under the jurisdiction of the Board of Land Commissioners.

Aspects of Legislation and Regulation Pertaining to Fossil Management

Jurisdiction for Fossil Management and Protection

- The state of Wyoming regulates fossils as object of scientific, educational and recreational heritage interests. Fossils are not regulated as minerals.
- Wyoming establishes science and education as the highest priority for fossils. Commercial collecting is allowed only for common species approved by the state.
- A permit is required before any excavation of palaeontological deposits on public lands. The Board may establish and enforce such regulations as it may deem necessary to protect palaeontological deposits from vandalism or injury.
- A person shall remove any part of a palaeontological deposit from the state without the consent of the Board. The Board may require, as a condition of consent, that the materials or deposit shall forever remain the property of the state of Wyoming.
- Persons holding permits for the removal of fossils may not subcontract the removal without the written permission of the Board.
- Fossil sites may be protected within state parks and designated geological sites.

Ownership

- All fossils and palaeontological deposits on state lands are the property of the state of Wyoming and removal of specimens from these lands shall not be allowed unless authorized by the Board.

Collecting and Permitting

- Casual or recreational collecting of invertebrate fossils for non-commercial purposes does not require a permit as long as the fossils are loose on the surface and require no excavation for removal.
- Exclusive Commercial Fossil Removal Permit
 - No commercial permit is available for dinosaur or other vertebrate fossils not specifically named in the rules and regulations.
 - Commercial permits are issued for 5 years and may be renewed for a further 5 years. The area of a commercial permit may not exceed 10 acres excluding access roads.
 - Applications for a commercial permit must be accompanied by a request to begin quarrying. Prior to the excavation of fossils, the quarry site must be surveyed. Quarrying of the site shall be done in a manner allows reclamation of the site. The use of explosives is prohibited.
 - The following fish genera are deemed common and approved for sale without review or royalty: *Knightsia*, *Diplomystus*, *Priscacara*, *Phareodus*, *Mioplosus*, *Notogoneus* and *Amhiplaga*. Additionally, common species of gastropods, bivalves, coprolites and plants fossils as illustrated in the Geological Survey of Wyoming Bulletin 63 (1984 edition) are approved for sale without review or royalty. Specimens of gars, rays, bowfins and paddlefish are approved for sale without review, but are subject to royalties.
 - All specimens not indicated as common above, are deemed rare and unusual and must be reported within thirty days of discovery. Such specimens may be sold only upon approval from the Office State Lands and Investments after consultation with the Wyoming Geological Survey. If approved for sale, royalties are payable.
 - Any specimens not approved for sale are the property of the state of Wyoming and must be turned over to the state as directed by the Office of State Lands and Investments.
 - Commercial permittees must file an annual quarrying or excavation report describing the work activities of the previous year
 - Upon termination of a commercial permit, any and all rare or unusual specimens in the permittee's possession either on site or at any other location used by the permittee shall be acknowledged and turned over to the Office of State Lands and Investments within thirty days of permit termination.
- Non-Exclusive Scientific Fossil Removal Permit
 - Scientific permits may be issued for the excavation of any fossils including dinosaur and vertebrate fossils and any rare or unusual fossils.
 - Scientific permits are considered only for persons deemed qualified to undertake such work and are undertaken for the benefit of recognized scientific and educational institutions.
 - Applications for a scientific permit must be accompanied by a definite outline of the investigative work to be undertaken.
 - Scientific permits may be issued for five years and renewed for five years.
 - Scientific permits shall not be granted for a larger area than the applicant can reasonably be expected to explore fully and systematically within the time limit of the permit.

- Because scientific permits are non-exclusive, scientific permits may also be issued to other parties for investigations within the same area.
- No fossil collected under a scientific permit may be removed from the state without written permission of the Board. Such specimens shall remain the property of the state and shall be treated as on loan to the permittee.
- Applications for a scientific permit shall be accompanied by a request to begin quarrying. Depending on the nature of the excavation of fossils, a legal survey of the quarry site may be required. Quarrying of the site shall be done in a manner allows reclamation of the site. The use of explosives is prohibited.
- Scientific permittees must file an annual quarrying or excavation report describing the investigative activities and a catalogue of specimens for the previous year.

Administration

- Exclusive Commercial Fossil Removal Permits
 - Application for a commercial permit must be accompanied by a \$50 fee and the first year's minimum royalty of \$10,000. Thereafter, a minimum royalty of \$10,000 is due on the permit anniversary date each year until expiration or cancellation of the permit.
 - A royalty of ten per cent of the gross sales price, without deductions for any costs, for specimens of gars, rays, bowfins and paddlefish and any rare or unusual specimens shall be paid quarterly.
 - Upon termination of a permit, all fossils subject to a royalty in the possession of the permittee will be inventoried by the Office of State Lands and Investments and valued at the then current market value based on specimen status, sales receipts and outstanding orders and quotes unless otherwise agreed by the Board. The permittee will be required to pay the royalty based on the value established.
 - A bond of no less than \$600 per acre must be filed prior to the removal of any fossils from a commercial permit area. The bond may be increased on the anniversary date of the permit if deemed inadequate to ensure the reclamation of the site.
- Non-Exclusive Scientific Fossil Removal Permit
 - An application for a scientific permit must be accompanied by a \$50 fee. There are no royalties for scientific permits.
 - At the discretion of the Office of State Lands and Investments, a bond may be required to assure reclamation of an excavation site.

Offence and Penalties

- Any person who in contravention of the Act and who for monetary gain, commercial or other purpose, removes palaeontological materials with a cumulative value in excess of \$500, shall be guilty of a felony and upon conviction shall be fined up to \$10,000 and/or imprisoned up to ten years.

6.2.4 California

Legislation and Regulation

California Public Resources Code

Responsibility: Various agencies with authority for state lands including the Department of Parks and Recreation, Department of Conservation, State Lands Commission, Division of State Lands.

Definition

"Historical resource" includes, but is not limited to, any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.

"Minerals" means any naturally occurring chemical element or compound, or groups of elements and compounds, formed from inorganic processes and organic substances, including, but not limited to, coal, peat, and bituminous rock, but excluding geothermal resources, natural gas and petroleum.

Public lands" mean lands owned by or under the jurisdiction of the state or any city, county, district, authority of public corporation.

"State lands" means lands owned by or under the jurisdiction of the state or any state agency.

Aspect of Legislation and Regulation Pertaining to Fossil Management

Jurisdiction for Fossil Management and Regulation

- Fossils qualify under the definition of historic resources because they can be considered objects or sites of significant scientific interest to California. Fossils may be managed and protected as heritage resources the same as archaeological objects and sites. Significant historic resource sites, including fossils, may be registered as historical landmarks.
- Fossils are not managed as minerals.
- Fossil sites may be protected within state parks by the Department of Parks and Recreation. The undertaking of scientific palaeontological studies designed to increase the understanding of these resources are a valuable source of information for park managers.

Ownership

- Resources on state lands, including fossils, are owned by the state of California.

Collecting and Permits

- No person shall knowingly and wilfully excavate upon, or remove, destroy, injure, or deface any vertebrate palaeontological site, including fossilized footprints, or

- any other palaeontological feature situated on public lands without the express permission of the public agency responsible for the lands. Information concerning these permits was not found.
- Palaeontological Scientific Collecting Permits are required in State Parks. Permits are issued only to qualified researchers for scientific and educational purposes. All fossils collected under a permit remain the property of the state of California, Department of Parks and Recreation.

Impact Assessment

- Prior to the construction of any major public works on state lands by a state agency, the Department of Parks and Recreation may be requested to undertake a survey of the location to determine whether the lands may contain any archaeological, palaeontological or other historic features.
- The Department of Parks and Recreation makes recommendations for photographing, recording, preservation or excavation of the archaeological, palaeontological or other historic features to the state agency proposing the construction.
- The state agency acting upon the recommendations of the Department of Parks and Recreation, may undertake the work necessary to preserve, record or excavation the archaeological, palaeontological or other historic features or the state agency may contract the work to the Department of Parks and Recreation.
- An archaeological or palaeontological monitor may be placed on the site to oversee the operations.

Offence and Penalties

- Collecting fossils from public lands without a permit is a misdemeanour. Penalties not specified.

6.2.5 Washington

Jurisdiction of fossil management as heritage resources, mineral resources or both is unclear. The Department of Natural Resources (DNR) administers state public lands under the *Public Lands Act* and has responsibility for minerals, oil and gas under the *Mines, Minerals and Petroleum Act*.

The Washington Administrative Code 232-12-251 Removal of Minerals, Wood and Artefacts from Department Lands states:

“It is unlawful to remove petrified wood, minerals, fossils, wood products or artefacts from department lands unless such removal is authorized by permit issued by the director.”

The State Parks & Recreation Commission, DNR advises that small amounts of invertebrates, plants, and petrified wood may be collected from public lands for personal use, but not for sale. If a significant number of fossils are being collected, particularly if the ground is being disturbed, a permit is definitely required. No vertebrate fossils may be removed without the permission of the State Geologist. These permits would be issued through DNR regional offices.

However, the Department of Geology, also DNR, advises that the above permits could probably only be issued in state parks or public lands designated by the DNR as rock, fossil, mineral or gold panning areas. A prospecting permit may be obtained to collect minerals or fossils on other public lands. A prospecting permit allows collecting and sampling of up to \$100 of valuable material from the area designated in the permit.

6.2.6 Oregon

Oregon state and public lands are administered by the Department of States Lands under several statutes. Oregon does not appear to regulate fossils, other than petrified wood.

The *State Lands Generally Act* (Oregon Revised Statutes, Title 25, Chapter 273) provides for the state to prescribe rules for the removal of semiprecious stones and petrified wood from state lands. The rules are designed to maximize the public benefit of these resources and permit the free use of state lands for the non-commercial collection of reasonable quantities of petrified wood and semiprecious stones.

The removal of semiprecious stones or petrified wood for commercial purposes or in a quantity having a value of \$500 or more requires a permit. A reasonable fee may be charged for a permit. If a person removes semiprecious stones or petrified wood from state land contrary to the rules, the material shall be subject to disposal by the state.

Fossil sites may be protected in state parks. Fossils may also be recognized as natural heritage resources because of their “unique geologic features”. Natural heritages resource areas may be designated as “Natural Heritage Conservation Areas” through a Natural Heritage Plan.

6.2.7 Other States

Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, New York, North Dakota, Tennessee and Virginia have regulations that require, to various degrees, permits for the removal of archaeological, palaeontological or historic materials from public lands.

Massachusetts lawmakers, geologists and police are seeking ways to curb the online sale of ancient dinosaur tracks stolen from the rich fossil beds of western Massachusetts. The state legislature this fall will consider a bill creating a commission to find ways to strengthen anti-poaching laws and develop other protections for fossils in Massachusetts.

7.0 China

Fossils in China are recognized as heritage objects. Fossils have been protected by China’s *Law on the Preservation of Cultural Relics*. However, the law did not specify which government organization was responsible for issuing permits, guarding against illegal collecting and working with customs official to prevent smuggling of fossils.

In recent years, China has been the focus of world-wide attention for a number of scientifically significant fossil discoveries of dinosaurs, birds, other vertebrates and invertebrates and plants.

These fossil discoveries unfortunately resulted in an increase of illegal digging, trafficking and export of important fossils from China. In response, China has adopted a new regulation on access to fossils that assign enforcement to a single administrative body. The Department of Geological Environment within the Ministry of Land and Resources is responsible for the new regulation.

The new regulation:

- Defines fossil resources as the remnants or traces of forms of life existing more than 10,000 years ago, such as skeletons and leaf imprint, and embedded in the earth's crust.
- Bans the private excavation of fossils without permit.
- Stipulates the type of fossils under key protection.
- Outlines the procedures required for the excavation and storage of fossils.
- Provides a fine up to 30,000 Yuan (US \$3,600) for the illegal excavation, selling and export of fossils.

8.0 CONCLUSIONS

8.1 Jurisdiction for Fossil Management and Protection

Most jurisdictions recognize and manage fossils as heritage resources of highest priority for science and education. These jurisdictions have clear statutory definitions for fossils that distinguish them from minerals and a policy or regulatory framework for the management of fossils. Significant fossils sites may be protected through designations as heritage or historic sites or established in a provincial, state or federal park.

In some jurisdictions, fossil could be considered minerals on the basis of broad definitions of minerals. The large-scale excavation of certain types of fossils such as ammonite shell or petrified wood for commercial purposes may be authorized under mining laws in certain cases.

8.2 Ownership

All fossils on public lands belong to the provincial, state or federal authority with jurisdictions for the public lands. Many jurisdictions provide clear statutory statement of government ownership of fossils on public lands. Most jurisdictions, but not all, recognize that fossils on private land are owned by the land owner. Some jurisdictions provide for people who collect fossils from public lands to retain the fossils in a custodial role even though ownership of the fossils is retained by the government. In certain cases, provision may be made for persons to gain ownership of fossils from older private collections or of common fossils not considered to be significant.

In British Columbia, the ownership of fossils on settlement lands is conveyed to First Nations through the treaty settlement process. In the United States, fossils on Indian Lands are held in trust for the benefit of the Indian people by the federal government.

8.3 Collecting and Permits

Fossil collecting on public lands is regulated to varying degrees in the majority of jurisdictions. Scientific collecting by permits to qualified researchers is often the only type of collecting allowed in many jurisdictions. Commercial collecting is rarely allowed and, if so, under permits with restricted conditions and often confined to common specimens not considered to be of scientific importance. Recreational collecting is often allowed without permits as long as the collecting is confined to the loose surface of the land or with minimal disturbance by hand tools to the land surface, and to the collection of common fossils within certain quantity limits.

8.4 Advisory Committee

A number of jurisdictions provide for the establishment of a Technical Advisory Committee to provide advice and guidance on the management of fossils on public lands.

8.5 Administration

Limited information was obtained on the administrative effort and costs to undertake a fossil management and permitting program. Jurisdictions that provided information usually issued permits only for scientific collecting of fossils. Experience in Alberta suggests that one full-time person and several persons part-time may be required for issuing up to 15 permits per year with costs of about \$100,000.

Many jurisdictions do not charge for permits or charge only a nominal fee so there is little revenue.

One jurisdiction, Wyoming, allows the commercial collecting of common species and collects royalties on the gross sale of fossils.

8.6 Impact Assessment

A number of jurisdictions provide authority to require impact assessments when propose development or construction will or has the potential to destroy, damage or interfere with fossil sites. Impact assessments required for heritage resources includes fossils.

8.7 Offence and Penalties

All jurisdictions that manage fossil as statutory heritage, scientific and educational resources provide for an offence and penalties for contravention of the statute. The nature of the offence and the extent of penalties varies among the jurisdictions.

9.0 POLICY RECOMMENDATIONS

The Province has approved the management of fossils as heritage resources and following principles.

FOSSIL MANAGEMENT PRINCIPLES

- 1. Fossils and fossil sites are important to British Columbia as heritage resources.**
- 2. The order of priority for fossil management is science, natural heritage, education and, where appropriate, commercial use.**
- 3. The order of priority for extraction or excavation of fossils is science, natural heritage, education and, where appropriate, commercial use. Non-extractive commercial use has precedent over extractive commercial use.**
- 4. A fossil management framework that recognizes the heritage value of fossils, the need to protect significant fossil sites and the interests of stakeholders is necessary.**

DRAFT FOSSIL MANAGEMENT FRAMEWORK

1. Establish clear jurisdiction for fossil management

- Clarify statutory jurisdiction for the management of fossils.
- Provide a clear definition of fossils to avoid conflicts with the allocation of minerals, coal and oil and gas resources.
- Clarify that ownership of fossils taken from Crown land is vested in the Crown in the right of British Columbia. Consider a “custodian” role for individuals or institutions possessing collections of fossils taken from Crown land. Identify situations where the province may consider transfer of ownership to other parties.
- Clarify whether fossils on private land are the property of the owner of the land or of the Crown.
- Develop a protocol agreement with Canada to ensure that only fossils collected under appropriate provincial permits are considered for export permits from Canada. Ensure provincial review of all applications to export British Columbia fossils.

2. Establish a strategic fossil resource management program and policy

- Provide that the priority interests in fossils are science, natural heritage and education. Commercial interests in fossils may also be considered if they are compatible with scientific, natural heritage and educational interests. Commercial activities that do not require excavation and that are consistent with science, heritage and educational values should have precedent over commercial excavation of fossils for sale.
- Provide for the protection of significant fossil sites where warranted.

- Develop a fossil management framework that provides motivation and encouragement to the professional, amateur and commercial (i.e. ecotourism) palaeontological community to collect fossils in a scientific manner.
- Require permits for the commercial extraction, sale or removal of fossils from the province.
- Provide a system of permitting or notification for scientific collecting that is not onerous or costly to researchers.
- Consider a low level of collecting activity (hand collecting, surface collecting) without permits by amateur palaeontologists as long as the fossils are made available for science and there is no sale or removal of the fossils from the province.
- Consider requiring impact assessments when development or construction activity may threaten the scientific, heritage or education values for fossils.
- Ensure that First Nations interests are considered in fossil management.
- Establish a Palaeontological Technical Advisory Committee under the *Heritage Conservation Act* appointed by the Minister to advise on fossil management issues. Members could include professional and amateur palaeontologists, the Royal BC Museum, academic institutions, MEM geologists, oil and gas and/or mining industry, Canadian Geological Survey and other individuals familiar with fossil management issues.
- The Palaeontological Technical Advisory Committee could set priorities for the protection of fossil resources and sites, set standards for the evaluation of fossil resources and sites, provide standard technical terms and conditions for fossil collecting permits and identify legislative or regulatory needs for fossil management.

3. Establish operational and administrative processes for fossil management.

- Provide administrative procedures based on existing policies and procedures wherever possible.
- Establish the information requirements to apply for fossil collecting. Identify any application and documentation fee requirements.
- Ensure applications receive scientific review and permits contain appropriate technical terms and conditions for fossil management.
- Establish a royalty for commercial collecting to ensure a fair return to the Crown.
- Understand and establish mitigation strategies to deal with those fossil sites already being exploited, whether the person has mineral claims or is simply removing fossils without tenure.

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11.0 APPENDIX 1

Managing British Columbia's Palaeontological Resources Policy Recommendations

Report of the Palaeontology Technical Working Committee (June 1990)

Policy Recommendations

Developing an Administrative Feedback

1. Establish a provincial palaeontological collection management unit.
2. Establish a palaeontological site management unit.
3. Compile an inventory of palaeontological collections, detailing significant public and private collections.
4. Compile a provincial palaeontological site inventory, based on existing information such as that available at the Geological Survey of Canada in Calgary.
5. Develop a provincial palaeontological collection which will meet high curatorial standards and be publicly accessible.
6. Develop an administrative mechanism for the management of palaeontological resources based on the following principles.
 - (a) Do not require a permit for surface collecting from non-protected sites.
 - (b) Require advance notification of proposals for the scientific study of palaeontological resources located on Crown Land and a report documenting the results of the study.
 - (c) Require a permit and collect appropriate royalties for the commercial extraction of fossils from Crown lands.
7. Develop a system for evaluating the significance of British Columbia palaeontological sites and fossils.
8. Use existing legislation and regulations to manage palaeontological sites and collections, such as the designation of significant fossils and fossil sites as provincial heritage sites or heritage objects under the *Heritage Conservation Act*.
9. Publish an administrative procedures manual.
10. Appoint a Palaeontological Technical Advisory Committee.