



ALBERTA

PALAEOLOGICAL

SOCIETY

BULLETIN

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ALBERTA PALAEOLOGICAL SOCIETY

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The Society was incorporated in 1986, a non-profit organization formed to:

- A. Promote the science of palaeontology through study and education.
- B. Make contributions to the science by:
 - 1) Discovery
 - 2) Collection
 - 3) Description, curation, and display
 - 4) Education of the general public
 - 5) Preserve material for study and the future
- C. Provide information and expertise to other collectors.
- D. Work with professionals at museums and universities to add to the palaeontological collections of the Province (preserve Alberta's heritage).

MEMBERSHIP: Any person with a sincere interest in palaeontology is eligible to present their application for membership in the Society.

Single Membership	\$10.00 annually
Family or Institution	\$15.00 annually

OUR BULLETIN WILL BE PUBLISHED QUARTERLY: March 1, June 1, September 1, and December 1 annually

DEADLINE FOR SUBMITTING MATERIAL FOR PUBLICATION IS THE 15TH OF THE MONTH PRIOR TO PUBLICATION.

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PRESIDENT'S VIEWPOINT

Wayne F. Braunberger

Over the past several months, controversy has raged over several articles published in various newspapers and magazines on the subject of ammonites and mining. This controversy began with the introduction of Bill 11, Historical Resources Amendment Act, 1987 by Culture Minister, Dennis Anderson. When questioned by reporters, Mr. Anderson made some comments which were quite contentious in nature. Mr. Anderson stated: "Alberta is sitting on a multi million dollar precious gem industry from stones culled from dinosaur skins", "there's tons of it out there", "....., the Historical Resources Amendment Act will open the door to free enterprise mining of ammonite". Inevitably comments have been made as to the competency of Mr. Anderson and whether he has a handle on his portfolio.

My own personal interpretation is that Mr. Anderson is not as well informed as he should be, either he doesn't consult his advisors or just plain doesn't do his job. In a recent interview, Mr. Anderson said that he tried to make a point of reading one book every two weeks on a subject unrelated to his job. Perhaps Mr. Anderson should stick to books related to his job. Also, from reading these various articles, one would get the impression that Mr. Anderson has been lobbied by the ammonite mining companies, or at least by one company in particular.

The main thrust of Bill 11 is to give the Minister the power to dispose of Historical Resources without any restrictions. This, in my mind, defeats the whole purpose of the Historical Resources Act, and the present system that is in place regarding the excavation, export, and sale of fossil resources. By giving the Minister the power to override the system, anyone not happy with a decision at a lower level has only to lobby the Minister. If you're convincing enough, chances are you could get what you want. There are no provisions within the Bill to review or qualify any decision that the Minister may make. The Minister may dispose of any archaeological or palaeontological resource on any terms he considers appropriate; tends to leave it wide open, doesn't it?

Fossils in Alberta are a popular subject, particularly ammonites and dinosaurs. Lack of knowledge on the part of the general public and many amateurs, as well as the antics of some of the entrepreneurs has shown the need for more information and education for all concerned. Creating more legislation will not help, it may only serve to drive collectors underground. Legislation such as Bill 11 is ill advised and opens the door for favoritism to specific interest groups such as the ammonite mining fraternity. The path to take is the one leading to the creation of a climate where mutual cooperation can occur and where the regulations are fairly applied with no favoritism shown to anyone. Mr. Anderson has obviously chosen a different path.

Let's suppose that the ammonite companies are given license to mine, what should be done then? Since only crushed specimens are used in the making of jewelry, I would propose that all whole ammonites or pieces that can be put back together, bivalves, gastropods, and any other fossil remains be turned over to the Crown for deposit in the Tyrrell Museum. As past events have shown, the proprietors of some of these companies are not as trustful as they should be, a qualified person should be placed at the mine site to take possession of the material immediately. This would ensure that all specimens would be properly evaluated and accurate records kept.

The Alberta Palaeontological Society has formed a committee to put together a Brief to the government on Bill 11, as well as to make comments and recommendations on the Historical Resources Act as it concerns fossil resources. This will be in the form of one presentation, however, I'm sure Mr. Anderson would welcome any individual comments that he receives. Changes will be made to the legislation, and unless you, the amateur collector, want to be left out in the cold, make your views known.

Alberta at the present time, to the best of my knowledge, has the most comprehensive regulations regarding historical resources (palaeontological and archaeological). Other provinces in Canada and states in the United States have, at the present, some form of legislation, or are considering some. Legislation regarding historical resources is a good idea, the problems begin when the actual regulations are written. If regulations are being considered for your area, or are already in place, take the time to read them over and make your views known. I'm sure your comments would be welcome.

The 1987 field season is about to hit high gear and the Society will once again sponsor a series of summer field trips. Harvey Negrich has been busy and has a series of trips planned for June, July and August. These field trips are well worth attending for they give you an opportunity to visit areas you may not be aware of, as well as all the friendly people you'll meet.

Plans are also being made for membership participation in the excavation of the bonebed behind the Tyrrell Museum of Palaeontology in Drumheller. This is also an excellent opportunity to learn and meet new and interesting people.

Your participation in Society sponsored events helps to make the Society strong. I look forward to seeing you on the trips and in the bonebed

PROGRAMS

Don Sabo

For the March and April general meetings, we were fortunate in once again having members from the staff of the Tyrrell Museum of Palaeontology deliver presentations on their areas of expertise.

In March, Dr. Paul Johnston, Curator of Invertebrate Palaeontology for the Tyrrell Museum, gave a presentation dealing with his work on a variety of invertebrate fossils in southeast Australia and his techniques in preparing them for study.

The April program was presented by Andy Neuman, Collections Manager for the Tyrrell Museum, on his collecting and study of the early Triassic fish and associated fauna found near Wapiti Lake, northeast British Columbia.

The May 22nd program was given by Wayne Haglund, Chairman of the Department of Geology and Petroleum Sciences for Mount Royal College, the topic being invertebrate fossils from New Zealand.

Commencing on September, we will once again have feature presentations, when available, for our general meetings. There has been interest shown from some of the previous speakers to give further presentations, however, if you know of someone that would like to present a program, or if you yourself feel you have something of interest to share with the members, please feel free to contact me at 238-1190. I would appreciate hearing from you.

EDUCATION

As was outlined in the March "Bulletin", the Society has paid for the use of the Rock Lab at Mount Royal College under the Continuing Education Program for the purpose of a monthly evening workshop.

Jonathan Greggs, Assistant Instructor for the Geology Department at Mount Royal College, begins the evening with a short lecture on a requested topic. For the remainder of the evening, members are given the opportunity to use the equipment and question Jonathan on fossil identification and preparation methods.

The March workshop was an introduction to the variety of equipment available to us for use. In April, Jonathan went through the procedure on how to identify a particular fossil by a reference search through the periodicals at the library. The May workshop lecture was on the proper equipment needed whilst collecting in the field.

The remainder of the year's workshops are to be held the first Friday of October, November and December, from 7:00 p.m. to 10:00 p.m. and are \$5.00 per evening. If you would like to attend these workshops, please feel free to drop in at the Rock Lab on these designated evenings. If you have a suggestion for a topic to be discussed, contact me well in advance so that arrangements can be made.

FIELD TRIPS PLANNED FOR 1987

Harvey Negrich

Another summer is rapidly descending upon us, and we have to take our regular monthly meetings outside. This year, we plan on once again having three trips to be held on the third weekend of the month, in keeping with our regular get together. I have said and hoped that we can reschedule any rained out trips to the next weekend, the August trip would put it back into the long weekend and that, I feel, should be left free. If rain cancels the August trip, it will be postponed until September.

Experience from last year tells us to bring along a pack lunch and drink as some of our expeditions do not necessarily allow us to stop at the best spot at high noon. Another advantage is that our group stays closer together if all have their own lunch.

Dress accordingly and bring along the normal collecting equipment.

TRIP ONE - JUNE 20/21, 1987 - RED DEER AREA

Assemble at the home of Betty Spiers, 4535 Moore Crescent, Red Deer, phone (403) 347-3280. Please note that due to active scientific quarrying going on at some of these localities, we will be working under Betty's excavation permit. This permit has restrictions and Betty will screen all material found, retaining whatever specimens she wishes for the Alberta Culture collections.

TRIP TWO - JULY 18, 1987 - CANYON CREEK

This is a one day trip. Our resource person is Percy Strong, and he has called for us to assemble at 9:00 a.m. at the junction of the Canyon Creek turnoff on the Elbow Falls road. Do not go into the Ice Cave parking lot as we do not expect to get there until later in the day. The theme on this trip will be stratigraphy and sedimentary environments and a good day is planned in looking at the rocks for their interesting interpretation by Percy. Some collecting will be done if time permits.

TRIP THREE - AUGUST 22/23, 1987 - DINOSAUR PROVINCIAL PARK (tentative)

I have called for assembly at the campground entrance to the Park at 10:00 a.m., July 22nd to allow members not camping overnight to drive to the area. Our tentative plans call for us to get in on an "off the path" type of collecting experience, all items collected being turned over to Alberta Culture. If this plan does not materialize, we should be able to view the displays and the new Field Center and facilities in the World Heritage Park. If time allows, we may be able to arrange a collecting trip outside the Park, north of the Park boundary.

Anyone who has not already signed their intent to attend one of the planned trips should do so, so that their name may be added to the list. We ask this for two reasons, (1) to get some idea of the level of interest and, (2) so that either the trip resource person or myself can contact everyone on the list if there should be any last minute change of plans.

Our motto is Keep in Touch, Good Luck!

BONEBED EXCAVATION - MIDLAND PROVINCIAL PARK

Plans are well underway for membership participation in excavating the bonebed within the network of walking trails located behind the Tyrrell Museum. Tentative plans are for this activity to begin in mid June and extend to the end of August. Members would be able to excavate on the weekend of their choice or during the mid week if preferred. Members are asked to provide their own tools (hammer, chisels, awls, etc.) and to be prepared for hot, sunny weather. Unfortunately, this project is not a sponsored field expedition and members are expected to provide their own accommodations. This project presents an excellent learning opportunity. Members will learn field collection methods, preservation techniques, specimen documentation, as well as meet the public. Training will be provided by the Tyrrell Museum. Anyone who is interested should contact Wayne Braunberger in Calgary at (403) 278-5154.

Articles submitted for inclusion in the "Bulletin" may, unless otherwise requested, be reproduced in exchange journals or newsletters. Contributors wishing their material to remain exclusive to the "Bulletin" should add the word "copyright" after the title. -- Editor

A LOWER TRIASSIC FOSSIL FISH ASSEMBLAGE FROM WESTERN CANADA

(Copyright)

By: A.G. Neuman

Tyrrell Museum of Palaeontology
Drumheller, Alberta

Introduction

Lower Triassic fishes have been known from western Canada since first reported by Lambe (1914) from the Banff area of Alberta. He reported a large deep-bodied fish that he called Platysomus canadensis (later named Bobasatrania canadensis). The exact locality from which this specimen was collected is unknown but it is believed to have come from the vicinity of Johnston's Creek. Part of the type specimen of this species can currently be viewed in the Banff Museum. Additional Triassic fishes were collected from sites in the Banff area over the next ten years, many of which were reported by Lambe (1916), Raymond (1925), Gardiner (1966) and Schaeffer and Mangus (1976).

Additional sites have been discovered in Western Canada that produce fossil fish material, some bearing articulated specimens. The best known of these Lower Triassic fish localities occur in the Ganoid Range near Wapiti Lake, B.C., 150 km southwest of Grande Prairie, Alberta (Fig. 1) The sites occur in the vicinity of a small lake appropriately named Fossil Fish Lake approximately 5 km from Wapiti Lake and about 40 km from the nearest road. Fossils were first discovered in this area by L.R. Laudon and a group of students from the University of Wisconsin in 1947. Extensive research programs have been going on at the Wapiti Lake sites during the 1980's by the Tyrrell Museum of Palaeontology and the University of Alberta.

Geology

The fossil-bearing sites at Wapiti Lake occur on a ridge approximately 8 km long, located near the front ranges of the Rocky Mountains. The ridge is made up of an overturned fold, the west side of which is formed by strata that are right side up with Lower Triassic rocks overlying late Paleozoic rocks. The eastern side is formed by the overturned east arm of the fold so that late Paleozoic rocks overlies the Triassic rocks in some regions. Locally high intensity deformation has resulted in additional folding and faulting causing discontinuity, displacement and repetition of beds. This repetition of beds is partly responsible for the high concentration of fossils in the talus of some areas.

The Triassic section at Wapiti Lake consists of the Sulphur Mountain and Whitehorse Formations. The Sulphur Mountain Formation is divided into three members; Vega-Phroso Siltstone, Whistler and Llama Members. The fossil bearing horizons belong to the Vega-Phroso Siltstone Member. Invertebrates collected from the sites suggest a Smithian (Lower Triassic) age for these rocks (Fig. 2).

The Vega-Phroso Siltstone Member is made up of dark brownish grey to orange brown calcareous siltstones, limestones, silty shales, and minor amounts of very fine grained sandstones. It ranges in thickness from 225 to 250 m and overlies porous, calcareous sandstones of the Permian Mowitch Formation and dark grey to white cherts of the Permian Ranger Canyon Formation. Immediately below these two formations is the conspicuous chert

breccio-conglomerate of the Lower Permian Belcourt Formation which acts as a useful marker bed for helping to locate the boundary between Triassic and older beds. Below this lie the grey to white limestones of the Mississippian Rundle Group.

It is difficult to determine exactly where the fish fossils occur stratigraphically as the sites that have been collected most extensively are highly deformed and most specimens have been collected from talus. Some in situ collections have been made, however, and these appear to indicate that there are concentrations of fossil material at more than one level. This is the topic of research currently being done by Dr. Don Brinkman and myself at the Tyrrell Museum of Palaeontology.

Faunal Assemblage

A variety of invertebrates and vertebrates are found in the Lower Triassic rocks at Wapiti Lake (Table 1) including a diverse assemblage of fossil fishes (Fig. 3). A number of research projects on this diverse fauna are being carried out by researchers at the Tyrrell Museum of Palaeontology including work on geology, invertebrates, fishes and reptiles.

Paleogeography and Paleocology

One important aspect of the study of the Wapiti Lake fauna is that it contributes to our knowledge of the paleobiogeography during the Lower Triassic. Quite a number of marine Triassic assemblages of approximately the same age are known from various parts of the world. When these sites are plotted on a map of the world as it is believed to have appeared during the Lower Triassic (Fig.4), they are seen to have a circum-pangaeal distribution (ie. they occur all around the supercontinent of Pangaea). Sites that include faunas of this age are found in:

- | | |
|---------------|--|
| 1) | Southeastern Idaho |
| 2) | Southern Alberta and British Columbia |
| 3) | In the Wapiti Lake area |
| 4) | Alaska |
| 5) | Ellesmere Island in northern Canada |
| 6) | East Greenland |
| 7) | West Spitzbergen off the northern coast of Scandinavia |
| 8) 9) 10) 11) | Siberia |
| 12) 13) 14) | China |
| 15) | Pakistan |
| 16) | Iran and Nepal |
| 17) 18) | Madagascar |
| 19) | Nepal |

The overall taxonomic resemblances that occur at these sites suggest that common ecological and geographical factors occurred in the relatively shallow seas around Pangaea during the Lower Triassic and that these shallow seas supported similar assemblages of animals.

The shelf sediments at the Wapiti Lake sites indicate that they were deposited in a marginal basin or platform of moderate depth between the continent on the east and possibly a chain of volcanic arcs on the west. The sediments present also suggest that the Vega-Phroso Siltstone Member was deposited in an easterly to southeasterly transgressing sea along the western margin

of a relatively deep water, open shelf, marine environment, similar in some respects to that now existing off the east coast of the United States. All organisms in the fauna can be associated with a pelagic way of life and there is little evidence for shallow water. Sediments higher in the section show that a shallowing trend occurred later during the deposition of the Vega-Phroso Siltstone Member.

Habits and Feeding

Studies on the anatomy of the fishes from Wapiti Lake suggest some things about the habits and feeding mechanisms of these fishes. Several of the kinds of fishes from the Sulphur Mountain Formation, including the small parasemionotids, perleidids and other smaller fishes (Fig. 3b, c, d, e, h), are small and fusiform with weak dentitions and small to moderate gapes. These fishes may have had a diet of plankton, detritus, larval fishes or algae and may be classified as small food feeders or grazers.

Albertonia, one of the largest fishes in the assemblage (Fig. 3a), has elongated pectoral fins, a deep body, and a well developed caudal fin which suggest that it was a slow, strong swimmer. It has a weak marginal dentition and apparently lacked pharyngeal teeth so it may have been a nibbler or grazer as well. It is difficult to speculate about the function of the extremely long pectoral fins in this genus. There are several theories about these fins based on several recent groups of fishes that have elongated pectoral fins. It was originally suggested that these elongated fins were similar to those found in recent groups of fishes that are said to fly or glide such as Pantodon, the hatchetfish or the flying fishes. The body shape of Albertonia is quite different from the shape in these fishes, however, and the pectoral fins are placed too low on the body for this type of locomotion. Flying fishes often have a hypocaudal lobe on the tail, which is not present in Albertonia. It is more likely that these fins were used for more typical modes of swimming, and the body form of Albertonia is more similar to that of fishes that are found in moderate depths or coral reef areas where the pectorals are used to aid in maneuvering and for short bursts of speed.

The enlarged pectoral fins may also be associated with a tactile function as in some fishes that bear taste buds and touch receptors on them. The Polynemidae and Dactylopteridae use elongated pectoral fins as tactile organs, and when extended and fanned out, these fins can stir up edible morsels when the fish is foraging.

An additional possibility for the possession of these enlarged fins is for sexual dimorphic display and there may be some evidence for this group being sexually dimorphic. Recent groups of fishes that display sexual dimorphism in the paired fins include the dragonets, topminnows, snappers and suckers.

Another kind of feeding mechanism is shown by Bobasatrania (Fig. 3g) which has a weak marginal dentition but a strong pharyngeal dentition. This suggests that these fishes were feeding on something with a moderately hard shell such as shrimps, and crushing them before swallowing.

Several kinds of Lower Triassic fishes, including Saurichthys (Fig. 3j) and Birgeria (Fig. 3i), have long shallow bodies on which the fins are placed far posteriorly and elongated jaws with well developed pointed teeth. These

features imply a predatory habit and one specimen of Saurichthys actually died with a small specimen of Boreosomus in its mouth. These animals may have fed much like the Recent long-nosed gar which is a "sit-and-wait" predator that strikes quickly and uses its long pointed jaws to grasp and hold prey, then swallowing it whole.

Summary

The study being carried on at Wapiti Lake demonstrates the many different kinds of information that can be obtained from fossil specimens. Not only do researchers study the animals themselves to acquire knowledge about their anatomy, relationships and habits, but a great deal can be learned about the distribution and ecology of these animals by studying the geology around them. The Wapiti Lake sites are proving to be a very important source of information that helps to extend our knowledge of life during the Lower Triassic. They are among the best Triassic marine sites known from anywhere in the world.

Acknowledgements

My thanks go to Kent Wallis for drafting Figure 3 and Donna Sloan for adapting it for this paper. My thanks also go to Rosemary Neuman for drafting Figure 1.

Literature Cited

- Brinkman, D.D. in prep. A Coelurosauravid (Reptilia, Diapsida) from the Sulphur Mountain Formation, British Columbia.
- Brinkman, D.D. and J. Callaway. in prep. Earliest Ichthyosaur from North America
- Brinkman, D.D. and A.G. Neuman. in prep. Lower Triassic vertebrates from the Sulphur Mountain Formation, Wapiti Lake, British Columbia
- Gardiner, B.G. 1966. Catalogue of Canadian fossil fishes. Roy. Ontario Mus., Univ. Toronto, Life Sci. Contrib., (68): 1-154
- Gibson, B.G. 1972. Triassic stratigraphy of the Pine Pass - Smoky River area, Rocky Mountain foothills and front ranges of British Columbia and Alberta. Geol. Surv. Canada, Paper 71-30: 1-108
- Gibson, B.C. 1975. Triassic rocks of the Rocky Mountain Foothills and Front Ranges of northeastern British Columbia and west-central Alberta. Geol. Surv. Canada, Bull. 247: 1-61
- Lambe, L.M. 1914. Description of a new species of Platysomus from the neighbourhood of Banff, Alberta. Trans. Roy. Soc. Canada, ser. 3, Sect. 4, 8:17-23, 1 plate.
- Lambe, L.M. 1916. Ganoid fishes from near Banff, Alberta. Trans. Roy. Soc. Canada, ser. 3, sect. 4, 10: 35-44, Plates I-III.
- Neuman, A.G. 1986. Fossil fishes of the families Perleididae and Parasemionotidae from the Lower Triassic Sulphur Mountain Formation of Western Canada. Unpubl. Univ. Alberta, Master's Thesis, 142 pp.
- Neuman, A.G. in prep. Fossil fishes of the family Perleididae (Osteichthyes) from the Lower Triassic Sulphur Mountain Formation, Wapiti Lake, B.C.
- Raymond, P.E. 1925. Two new fossil fishes from Alberta. Amer. Jour. Sci. ser. 5, 210: 551-555
- Schaeffer, B. and M. Mangus. 1976. An early Triassic fish assemblage from British Columbia. Bull. Amer. Mus. Nat. Hist., 156: 517-563

Table 1

Faunal List - Wapiti Lake British Columbia
Vega-Phroso Siltstone Member

Invertebrates

Brachiopoda
terebratulid

Mollusca
cuttlefish
squid
ammonites

Arctoceras sp. (Gibson, 1972)
Xenoceltites sp. (Gibson, 1972)
Xenoceltites cf. X. hannai (Schaeffer and Mangus, 1976)
Juvenites sp. (Schaeffer and Mangus, 1976)
Paranorites sp.
Euflemingites sp.

bivalves

Posidonia mimer (Gibson, 1972)
Gervillia sp. (Gibson, 1972)
Pseudomonotis occidentalis (Gibson, 1972)
Claraia stachei (Gibson, personal comm.)
Trigonodus sp. (Schaeffer and Mangus, 1976)

Arthropoda

phyllocarids
cf. Concavicularis (Richards, personal comm.)
Several kinds of shrimp-like arthropods

Vertebrates

Fishes

Condriichthyes

cf. Palaeobates (Schaeffer and Mangus, 1976)
Edestodus sp. (Lund, personal comm.)
unidentified shark material
cf. Listracanthus (Schaeffer and Mangus, 1976)

Osteichthyes

Pteronisculus sp. (Schaeffer and Mangus, 1976)
Birgeria sp. (Schaeffer and Mangus, 1976)
Boreosomus sp. (Schaeffer and Mangus, 1976)
at least one unidentified taxon of paleoniscoid
Bobasatrania canadensis (Schaeffer and Mangus, 1976)
Bobasatrania sp. (possibly new species;
Brinkman and Neuman, in prep.)
Perleidus canadensis (Neuman, 1986; in prep)
cf. Perleidus (Schaeffer and Mangus, 1976; Neuman, 1986)
Australosomus sp. (Schaeffer and Mangus, 1976)
Saurichthys sp. (Schaeffer and Mangus, 1976)
Saurichthys sp. (possibly second species;
Brinkman and Neuman, in prep.)
Watsonulus cf. W. eugnathoides (Neuman, 1986)
Laudonia brevicephala (Neuman, 1986)
Albertonia cupidinia (Schaeffer and Mangus, 1976; Neuman, 1986)
Albertonia lambei (Neuman, 1986)
at least one taxon of unidentified ray-finned fish.
Whiteia sp. (Schaeffer and Mangus, 1976)
an additional coelacanth taxon (Brinkman, personal comm.)

Reptiles

Eosuchia

Wapitisauros (Brinkman, in prep.)

Ichthyosauria

Mixosaurus (Brinkman and Callaway, in prep.)

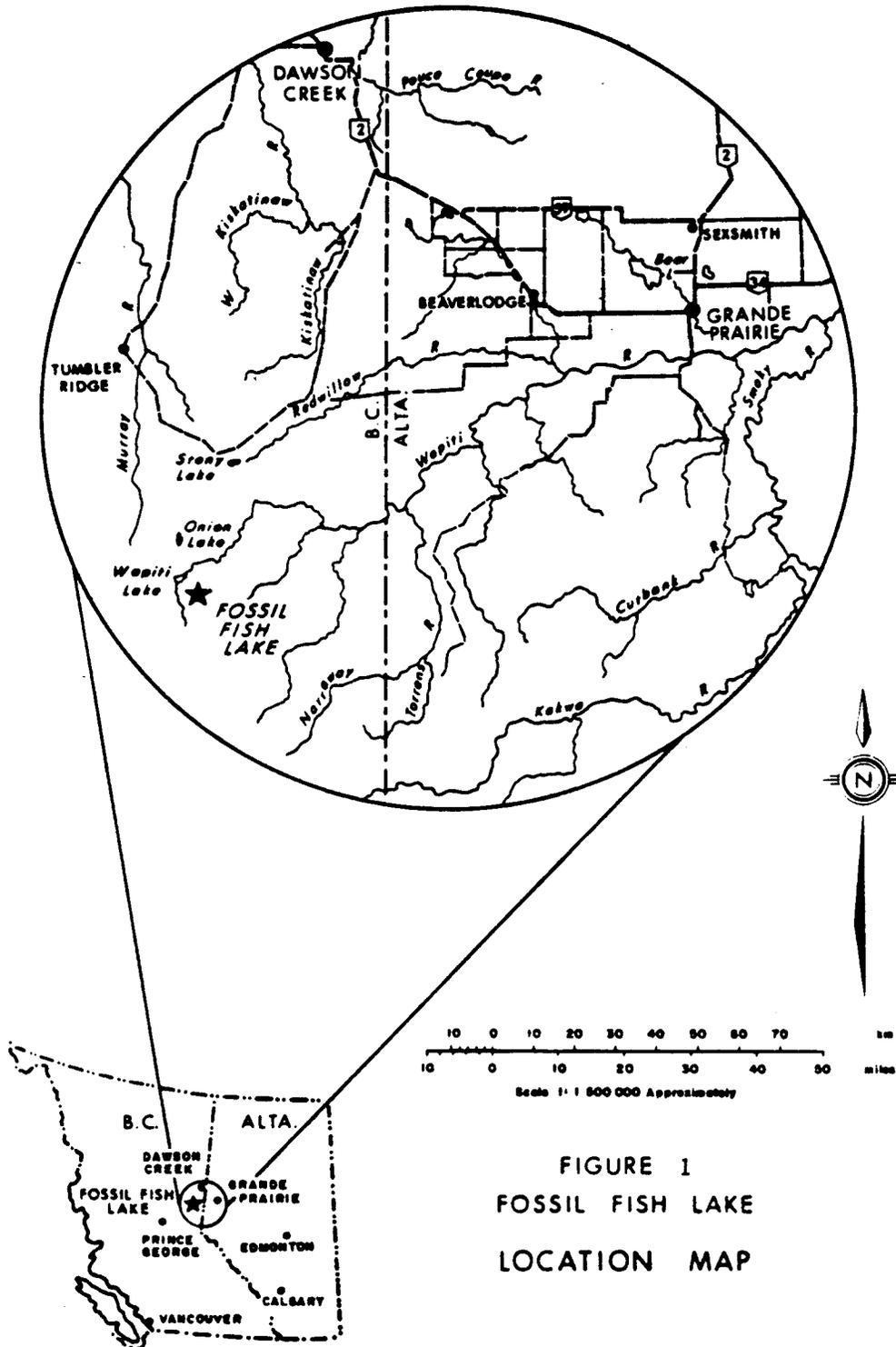


FIGURE 1
FOSSIL FISH LAKE
LOCATION MAP

SERIES	STAGE	FOOTHILLS		FOOTHILLS-FRONT RANGES		
		Sikanni Chief River-Pine Pass Area	Pine Pass-Sukunka River Area	Sukunka-Smoky Rivers		
LATE TRIASSIC	NORIAN	BOCOCK FORMATION		[Hatched Area]		
		PARDONET FORMATION				
	KARNIAN	LUDINGTON FORMATION	BALDONNEL FORMATION Ducette Member	BALDONNEL FORMATION Ducette Member	WHITEHORSE FM GROUP	Winnitred Member
			CHARLIE LAKE FORMATION	CHARLIE LAKE FORMATION		Starlight Evaporite Member
MIDDLE TRIASSIC	LADINIAN	LIARD FORMATION	SULPHUR MOUNTAIN FORMATION	RIVER SPRAY GROUP	Llama Member	
ANISIAN	TOAD FORMATION	Whistler Member			Whistler Member	
SPATHIAN		Vega-Phroso			Vega-Phroso	
EARLY TRIASSIC	SMITHIAN	GRAYLING FORMATION	Siltstone Member	SULPHUR MOUNTAIN FORMATION	Siltstone Member	
	DIENERIAN					
	GRIESBACHIAN					

*Age not established - believed to be Norian

GSC

FIGURE 2. Nomenclature and correlation chart.
(from Gibson, 1975)

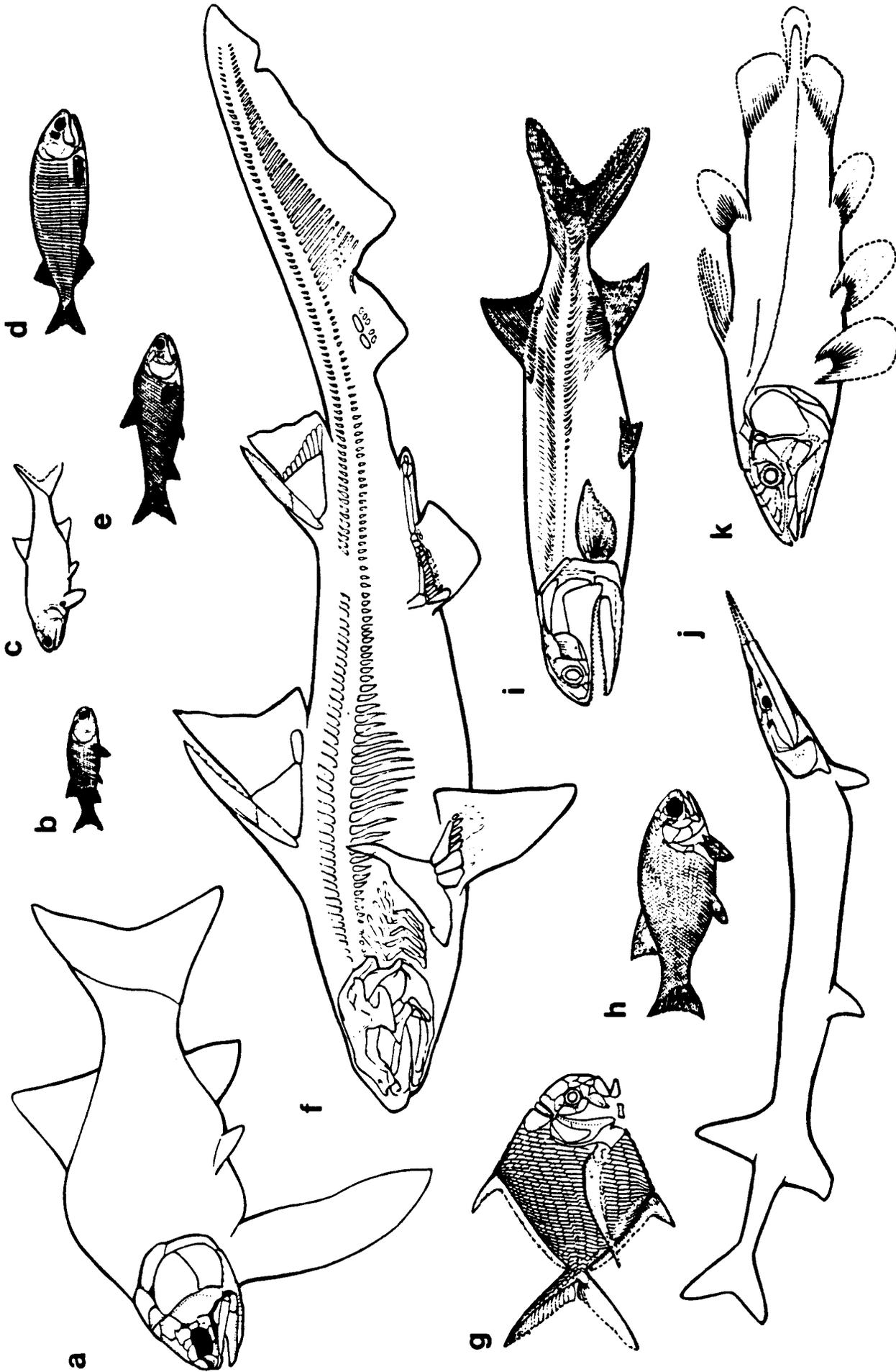


Figure 3: Fossil fish diversity in the lower Triassic Sulphur Mountain Formation, Wapiti Lake.

- | | | |
|--------------------------|-----------------------------|--------------------------|
| a = <u>Albertonia</u> | b = <u>Perleidus</u> | c = <u>Pteronisculus</u> |
| d = <u>Australosomus</u> | e = <u>Boreosomus</u> | f = <u>Hybodontidae</u> |
| g = <u>Bobasatrania</u> | h = <u>Parasemionotidae</u> | i = <u>Birgeria</u> |
| j = <u>Saurichthys</u> | k = <u>Coelacanthidae</u> | |

Figure 3



FIG. 4. Distribution of Lower Triassic marine fossil fish localities on predrift map of Pangaea. Locality numbers as in text. Clear areas represent land, stippled areas represent seaways. (after Schaeffer and Mangus, 1976)

ADDITIONS TO MEMBERSHIP LIST

**Names and contact information removed
to protect members' privacy.**

ALBERTA HISTORICAL RESOURCES ACT - BRIEF COMMITTEE

An ad hoc committee has been formed to put together a Brief to the government on proposed amendments to the Act, as well as to make comments and recommendations on the Act in its present form. Over the spring, summer and fall, the committee will put together the Brief. A draft will be presented at the October General Meeting for approval, with the final version presented to government in November. Anyone wishing to make comments is invited to do so.

Send your comments to:

Brief Committee
Alberta Palaeontological Society
P.O. Box 7371, Station "E"
Calgary, Alberta
T3C 3M2



FOURTH SYMPOSIUM ON MESOZOIC TERRESTRIAL ECOSYSTEMS

August 10 - 14, 1987

TYRRELL MUSEUM OF PALAEOONTOLOGY
DRUMHELLER, ALBERTA

An international symposium dealing
with all aspects of Mesozoic
non-marine sediments, faunas and
floras, including:

- stratigraphy
- correlation
- sedimentology
- taxonomy
- taphonomy
- palaeoecology

PAPERS WELCOMED

Contact: Conference Co-ordinator
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