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Field Trip Guides

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FIELD TRIP 4

VANISHED WORLD TRAIL

Ewan Fordyce

INTRODUCTION

The Vanished World Trail – part of the national Heritage Trail network - provides a self-guided 80 km tour around selected geological sites in North Otago, from Duntroon to Waianakarua. Sites are on public and private land; access to sites is free. The trail is a community initiative developed in partnership with the University of Otago to foster conservation, education and scientific study.

Vanished World aims to take geology in the broadest sense to the public. Signposted sites identify key outcrops, fossil localities, and landforms. Two sites show prepared fossil whales in the rock. The trail is complemented by the recently-opened Vanished World Centre in Duntroon. Since their recent opening, the Vanished World Trail and Centre have attracted many New Zealand and international visitors.

A trail map, outcrop photographs and details of particular sites are given in the **Vanished World trail brochure** – an A3 folded colour document (Fordyce 2002). **Brochures will be supplied to field trip participants as part of the trip cost, and will be used to introduce localities.**

SUMMARY: THE COMPONENTS OF VANISHED WORLD

1. Vanished World **Trail**: free, open to the public.
2. Vanished World **Centre**: paid entry to field centre with interpretive displays.
3. Vanished World **Incorporated**: a society for policy and administration, including fundraising and logistics, for Trail and Centre.
4. **Friends** of Vanished World: support group; membership by subscription.

WHAT?

Vanished World Trail introduces geology to the public through representative localities around North Otago. The professional geologist would normally work with the much greater range of outcrops documented in the geological literature (e.g. Gage 1957), and the combination offered by Vanished World is to give the public a taste of what is present. Sites were chosen with conservation in mind – most were already well-known, and/or can stand repeated visits with likelihood of sampling (although the latter is discouraged). Localities introduce sedimentary, igneous and metamorphic rocks, fossil sites, mineral localities, and major landforms.

WHERE?

The trail follows the coast from Waianakarua to Oamaru, and travels inland to Duntroon. A map on the brochure shows localities, roads, and towns. Localities have signposts (finger-boards) and/or on-site explanation (plaque with 100+ words). Four major information boards will shortly be, or have been, installed to explain the trail. These boards are at: Duntroon, Awamoko Valley, Oamaru and Waianakarua. Each board shows a trail map which, however, has not been reproduced for free distribution. Rather, Vanished World Inc encourages people to buy the brochure to navigate the trail.

HISTORY BEHIND THE TRAIL

Since the 1980s I have had an active programme working on fossil vertebrates in North Otago, and have also regularly visited the region with field classes in stratigraphy, paleontology and mapping. Work has involved ongoing rapport with landowners, and the activity by geologists has generally been well-received by local communities. A few years ago, some landowners approached me to see if local geology might be used to develop broader appreciation of the district, fostering education, science, and conservation while also appealing to nature tourism – especially to “free and independent travellers.” Attractions that keep tourists in the district another half day are important to business and to jobs. Vanished World Incorporated was formed to further these aims. That group has been the driving force behind broader concepts especially involving the community, and behind the visitor centre. My role has been to act as scientific advisor, choosing and developing sites, developing scientific concepts, and providing text and graphics.

WHY A TRAIL?

The trail fosters better understanding and appreciation of fossils, rocks, minerals and landscapes of the region. Trail literature emphasises that Earth materials are natural features which are part of our heritage, and which are important to farming, tourism, industry, education and science. The Trail has been developed as part of the New Zealand Heritage Trails network.

USING THE TRAIL

The trail extends over some 80 km of road. One moves from place to place, starting or stopping at any point. At most localities, you must walk a short distance to the site. The Vanished World Centre at Duntroon has displays to help interpret the trail, supplementing the four large information boards along the route. A small free brochure (DLE A4, folded to fit a standard card rack) gives a basic introduction to the trail, but does not include details of sites or a detailed map. It is possible to do the trail without the folded A3 colour brochure, but the brochure gives details beyond what can be seen on signposts and display boards.

FUNDING

Access to trail sites is free and, more broadly, Vanished World was not established for financial profit. However, there is a cost to developing and maintaining the trail, and the Visitor Centre – a desirable adjunct to the trail – also has significant costs. Funds are raised in several ways including:

- 1, Sale of trail brochure. This is the major money-earner for Vanished World Inc. Brochure production costs were kept low because a writer, designer and graphics artist were not involved (see below).
- 2, Entry to Vanished World Centre (\$5/adult, \$10/ family).
- 3, Grants and business donations. These have been essential in the setup phase, but are not the answer to long-term financial viability.

FUTURE DEVELOPMENTS

A guidebook on North Otago geology, particularly fossils, is being written. More displays are planned for Vanished World Centre (below). Material is on the web under both Vanished World and Department of Geology at University of Otago:

<http://www.vanishedworld.co.nz/index.htm>

<http://www.otago.ac.nz/Geology/features/paleontology/paleontology.html>

VANISHED WORLD CENTRE

The Centre at Duntroon has interpretive displays of fossils and rocks. Specimens are mostly on loan from the Geology Museum, University of Otago. Some of the key vertebrates are casts, but in the longer term it is planned to display more original specimens. Some of the specimens are interpreted using graphics panels with a mix of text and illustrations. I produced the photos and text for panels and other displays, and Martin Fisher did graphic assembly. Currently the graphics panels deal with: geological time, geological map of Waitaki region, changing geography, Ototara Limestone, *Platydyptes* penguin, *Waipatia* dolphin, and dalpiazinid dolphins. More displays are planned, particularly for rocks and minerals.

WHO IS INVOLVED?

The trail is organised by Vanished World, Inc. – a group of locals interested in promoting the region's natural features while ensuring appropriate conservation. The broader aims of Vanished World Inc are supported by Friends of Vanished World and sponsors including Community Trust of Otago, the Oamaru Licensing Trust Charitable Foundation, businesses such as Great Southern Oamaru, service clubs such as the Lower Waitaki Lions, the Department of Geology of the University of Otago, and private donors. (This is not a complete list.)

ANATINI AND EARTHQUAKES FOSSIL WHALE SITES

Fossil whale bones have been uncovered at two sites, and placed under protective cover so that they may be seen in situ by visitors. Work was carried out by Ewan Fordyce and Andrew Grebneff helped, at the Anatini site, by paid assistants and volunteers. It took 2 days to uncover the Anatini fossil and 3 days for the Earthquakes. Tools used included: pneumatic chisels, a masonry cutoff saw, and a rock drill (Pionjar). For the Earthquakes excavation, a Stihl chainsaw with tungsten-tipped chain was invaluable. Members of Vanished World Inc, volunteers, and service clubs made the access paths.

Both fossils are ancient baleen whales, distantly related to large filter-feeding whales of modern oceans – like the minke whale of Antarctic waters. Both specimens include parts of the skull, lower jaws, and associated parts of the skeleton. Only a few bones were visible on the surface before each fossils was excavated. Obviously, until a fossil vertebrate is uncovered, one can never be sure what to expect. However, the surface exposure of bones known to be associated in life (e.g. parts of skull and jaws seen in section) gives some confidence that the fossil will be informative upon excavation.

The size of the Anatini jaw fragment indicates a lower jaw ~1.5-1.8 m long, and a skull ~1.7-2.0 m long. Many living whales have a body which is about 5-6 times skull length, giving a body of 8-10 m long. The Earthquakes whale is smaller.

The Anatini whale is in the Maerewhenua Member of Otekaike Limestone, probably low in the Waitakian, perhaps 24-25 Ma. At the Earthquakes, the lithology is upper Kokoamu Greensand, low to middle Duntroonian, 26-28 Ma or older.

INTELLECTUAL PROTECTION

Vanished world Incorporated has trademarked various combinations of the names Vanished World Trail, plus the distinctive logo by artist Burns Pollock, to give some financial security. Tourist operators wishing to take tourists on a paid tour around the trail (which is otherwise free) are required to seek a concession to use the words Vanished World and the logo. This brings (or may bring) a modest income to the Society.

I have asserted copyright on my photographs and text which otherwise are provided gratis for use of Vanished World Inc and the Vanished World Centre.

TECHNICAL NOTES

I used 35 mm cameras (Pentax SPII, Nikon F90x) with Velvia or Provia slide film, and scanned the images with a Nikon LS2000 film scanner. Adobe Photoshop 6 and 7, Adobe Illustrator 9 and 10 were used on a Macintosh G4 to process images especially for the folded A3 brochure. Later, I involved Dunedin graphics artist Martin Fisher who took my draft layouts and added the professional touches – as seen in the display

materials at the Vanished World Centre. This approach is strongly recommended for a better product.

DISCLAIMER

Printed material about the Trail gives a disclaimer which states that any written information provided does not guarantee access to any particular site, makes no claim about the safety of natural features and private property, and does not guarantee the right to find, collect or keep geological materials. It is stressed that access to private land is by permission of owner(s) and may be governed by safety and health and other regulations. Vanished World understands that the collection of geological specimens for commercial purposes or for export is governed by law.

ACKNOWLEDGEMENTS

Participants and sponsors are identified in text above. Research featured in Vanished World was supported in part by the University of Otago and the National Geographic Society. Andrew Grebneff did most of the fossil preparation.

CONTACTS

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REFERENCES

- Fordyce, R.E. 2002. *Vanished World fossil trail, North Otago, New Zealand*. Vanished World, Duntroon. 6 panels (folded brochure).
- Gage, M. 1957. The geology of Waitaki subdivision. *New Zealand Geological Survey bulletin n.s. 55*: 1-135.