Newsletter of the South West New Zealand Endangered Species Trust

No 13, April 2008 www.tepukahereka.org.nz

Our Mission

"To fund and establish a world class sanctuary on Te Puka-Hereka for rare and endangered native species of flora and fauna that will be jointly developed by private philanthropists and government participants."

In this edition….

The February volunteer trip found only 4 stoats. None on Coal Island and 4 in mainland traps

Right: Coal Island volunteers stop for lunch at Sealers Beach near Puysegur Point. (Note the absence of sandflies.)

Photo: Maggie Oakley.

Planning for Mouse Eradication

Planning for the eradication of mice from Coal Island later in the year is progressing well. Consultants Viv Shaw and Nick Torr have been engaged by the Trust to manage the project. The Resource Consent application process is on track with the Trust having written to a number of parties who have an interest. A number of positive responses have been received. Once the Resource Consent is obtained the Trust will be able to place an order for bait. There will be a further update in the July newsletter by which time all should be ready for the first bait application.

The Geology of Coal Island

By Jon Lindqvist

Jon Lindqvist and son Finn spent 6 days re-examining the geology of Coal Island in December, 2007. Jon first visited in 1973 for University of Otago thesis research that also covered the area between Puysegur Point and Gates Harbour on the south coast.

Ordovician slate, sandstone, and quartz veins

Coal Island is composed of three geological parts. The oldest rocks are slate and sandstone of Ordovician age (488-444 million years) found along the shore south and northwest of Moonlight Point. Originally deposited as deep sea mud, the dark grey to black slate contains rare fossil graptolites, small colonial planktonic animals that have no known modern relatives. Interlayered with the slate, sandstone layers were deposited as turbidity currents, dense sediment-laden flows that today periodically carry sand and mud from the continental shelf to the deep ocean floor. The Ordovician rocks around Preservation Inlet have been weakly metamorphosed during deep burial and heating related to granitic rock intrusions. Associated with the Ordovician rocks, white quartz veins up to 50 cm or more thick cut across the original bedding at various angles. Although quartz veins have been mined for their gold content elsewhere around Preservation Inlet, none appear to have been mined on the island.

Viewed from the east, Coal Island protects southern Preservation Inlet from heavy swell waves. Its highest point is approximately 250 m.

Mid-Cretaceous rift lake deposits

Most of the island is underlain by layered sandstone and mudstone that was deposited mid-way through the Cretaceous period, from approximately 100 to 90 million years ago. Softer than the Ordovician rocks, the Cretaceous sedimentary rocks formed during an episode of continental drift when segments of the earth's crust now occupied by New Zealand and Australia parted from Gondwanaland, the

Above: Ordovician sandstone and slaty mudstone beds, Fishing Bay. The slaty parting or cleavage diverges 5-10˚ from the original bedding.

Below: Ancient current ripples mark the top of an Ordovician sandstone bed, Fishing Bay. Treble Mountain (granite) appears in the upper-left background.

former continent that also included Africa, South America, Antarctica and India.

The outcrop belt of Cretaceous sediments extends from Gulches Head at the north entrance of Preservation Inlet, to Coal Island, across Otago Retreat to Puysegur Point, and southeast to Gates Harbour. Also deposited largely from turbidity flows, but in a continental rift lake setting, individual 'turbidite' beds typically show an upwards gradation from coarse gritty sand at the base to silty mudstone at the top. Although deep-water lake sediments predominate, some of the rock succession on Coal Island and Gulches Head formed in swampy river deltas where peat accumulated. The resultant thin coal seams near Sandfly Point likely gave the island its English name. Related rocks are found along Pororari River and Buller Gorge in Westland, and in many offshore basins.

Quaternary Deposits and Landscape Features

The third and youngest geological division is represented by gravel deposits and landforms that are related to successive glacial advances and recessions during the last few hundred thousand years. A layer of bouldery sand exposed about some 70 metres above beach level along the western shore was probably deposited during a time of global warmth and slightly higher sea-level about 125-80 thousand years ago commonly called the 'Last Interglacial Period'. This beach deposit provides a measure of the amount of uplift Fiordland is undergoing due to tectonic plate interactions. The western coast beaches and shallows around Moonlight Point are littered with granite boulders, some approaching truck-size. The boulders were transported tens of kilometres by glacial ice that probably never completely overrode the island.

Above: Mid-Cretaceous sandstone and siltstone beds near Sandfly Point. The prominent inclined-laminated sandstone bed was probably deposited at the mouth of a river that flowed into former 'Lake Puysegur'.

Right: Mid-Cretaceous sandstone and mudstone turbidite beds in a cliff on the western shore.

Formed during warm interglacial periods of high sea level, some remnants of higher terrace flats on the island are criss-crossed by the remains of water races that were hacked though heavy forest during the late 1800s to aid gold recovery. But to get at gold in stream beds alluvial miners also had to toil long and hard to remove boulders, stacking them neatly in walls that survive today.

Right: A gold mining relic. Part of a boulder wall in the bed of a stream flowing into Fishing Bay. Photo: Finn Lindqvist

Kepler Consulting
Professional Marketing Coordination
bp
WWF
South West Helicopters
ARROW INTERNATIONAL Group Limited
NZ Lottery Grants Board
ASTRA PRINT
Puysegur Holdings Ltd
FiordlandLink experience

For further information contact:

South West New Zealand Endangered Species Charitable Trust

C/- PO Box 102
TE ANAU

email
info@tepukahereka.org.nz

phone
03 249 7402

fax
03 249 7409