

DIGGING FOR DINOSAURS ROCK STARS

Finding prehistoric fossils doesn't come easy. You need patience, resilience, stamina and a trained eye. **Jane Freeman** joins a team in Gippsland.

FOR 120 million years, the dinosaur tooth sat in the silent darkness of the rock's tight grasp. Now it is in a Ford Laser, beeping along the Inverloch coastal road, on its way to be touched up with Superglue under the remorseless glare of a microscope.

The tooth, which measures about three millimetres in length, is the most exciting discovery so far in a new dig at what could be called "Dinosaur Rocks", on the beach west of Inverloch. The tooth from a small carnivorous dinosaur has one serrated edge, which is almost unique, and could indicate a whole new species of dinosaur is about to be discovered.

Bone preparator Lesley Kool, who is leading the dig, croons lovingly to the tooth as she looks at it under the microscope. "Oh, you beautiful thing," she tells it, as she scrapes away bits of rock with a needle probe. Under the microscope, it looks like an elephant tusk, gleaming copper brown, curving fearfully, elegantly serrated. This little dino, probably as tall as a large dog, had a mouthful of these savage teeth designed for tearing, rather than chewing, and they probably hunted in packs.

The month-long dig at Dinosaur Rocks is a sibling to the long-running explorations at Dinosaur Cove in the Otways. In 10 years in the Otways, only one similar tooth was found. At the beach site, three teeth have already been found during a preliminary dig two years ago and this new find indicates the thrilling possibility of a skull or jaw bone nearby.

Australian dinosaurs were in fact left alone longer than the rest of the world's, until American couple Tom Rich (curator of vertebrate palaeontology at the Museum of Victoria) and Patricia Vickers-Rich (reader in Earth Sciences and Ecology and Evolutionary Biology Monash University) came to Australia in search of mammals and birds and became fascinated by dinosaurs instead.

The first job is to shovel and swirl away the sand to uncover the work site, referred to as "The Hole", a shallow depression where chunks of stone have been chiselled away. The Hole looks like nothing more than an excavation of a piece of pavement, full of elephant-grey mottled stone, but it is a coveted place to be. Andre Coffa and Gary McWilliams, both Monash University students, kneel on the sharp rock and wet sand for hours on end, peering at the rockface and wielding hammers.

"It's addictive," says Andre, who hopes to do his masters on Australian dinosaurs. "People used to think dinosaurs were stupid, but we now know more about them, for example they were social animals who hunted in packs. Birds are descended from dinosaurs. I think of dinosaurs as birds and birds as dinosaurs." Gary says he is a collector by nature — pottery, cacti, kitsch ashtrays. "It's not as much fun as this all the time," he says seriously, looking down at his soggy, sand-soaked shoes and sandy jeans. "Often you have to cope with rain and live in tents."

EACH time a new clump of rock is lifted, there's a feeling of suspense. Spotting bone is an art. Some people never get it, others are "hawkeyes". Lesley remembers the woman who found the remarkable young hipsilophodont skull at the Otways. She had the top of the skull and threw the rock away, thinking it was useless. As it sailed through the air, she noticed something odd about the rock and went back for it. Lesley says: "You can't afford to be impatient because that is the way mistakes are made and bones get ruined. But it is really tantalising, wondering what's in the rock waiting to be exposed."

Dinosaur Rocks is near the place where the first fossil bone in south-eastern Australia was discovered. Around the turn of the century, a geologist found two small bones at Eagles Nest,

self-proclaimed "rock hood". "Of course this part is tedious," she says, "but there is the chance that I could find something, like a tooth. That'd put me over the moon." "It's like playing golf," says Mike, LandCare officer on Phillip Island. "Everyone plays golf because the next hit might be a hole in one. That's the same with cracking rocks. When you get a hot one it can be so exhilarating and it happens just often enough to keep you going."

Lesley looks like a primary teacher and team members bring her their little offerings like hopeful kids doing show'n'tell. If it really is bone, the speck is circled with red texta and packed up in newspaper by Lesley, bound with masking tape and marked with a description and a grading out of five (five being the most interesting). Lesley will spend the rest of the year, sorting and glueing and preparing these parcels of bone.

At lunchtime, the team break to eat the cheese and salami sandwiches they have made in the rent-a-holiday home in Inverloch that morning. They spend a lot of time answering questions from the stream of holiday makers who plod past, with their terry-towelling hats and boxer dogs and baggy shorts and jokes about "sore arses". The policy guidelines for the dig includes the following warning: "Creationists. Do not attempt to engage them in debate."

They are also told not to mention skulls or skeletons or get people too excited. There is an increasing trend for fossils to be whipped off home by amateurs and sold overseas. Despite this softly softly approach, there is a vigorous publicity schedule, everyone from the 'Leongatha Star' to Sofie Formica is plodding over the beach. You can understand the longing in Lesley's voice when she looks around and says: "You have to try to imagine what this place was like back then".

BACK then, instead of a flat

by dinosaurs instead.

THEIR joint program, run by Monash and the Museum, has now been under way for 15 years. They were the first ones to find evidence that Victoria's dinosaurs lived in a polar climate, probably surviving in twilight dimness for three or four months a year.

Just three days into the dig, Dinosaur Rocks is already yielding major finds, including the tooth and a femur bone from a Hipsilophodont, a vegetarian dinosaur which was as fast as a greyhound, running on large hind legs somewhat like a scaly kangaroo.

Australia has very few articulated skeletons, due to climatic and geographic conditions, and the volunteers at Dinosaur Rocks hunt for tiny fragments of fossilised bone that look, to the untutored eye, like splinters of wood. In Alberta, Canada, where entire skeletons lie around to be stumbled over, palaeontologists would laugh at the scraps lovingly collected by Australian diggers.

The dino digging day starts at about 8.30 am, when the tide goes out sufficiently to expose the flat sandstone rocks which hide the rich fossil layer. The sun is already relentless, everyone (rather endearingly) wears dinosaur T-shirts and sweats a

two small bones at Eagles Nest, and 80 years later, two Monash University students retraced the surveyor's steps and found the ankle bone from a large carnivorous dinosaur, Allosaurus, Australia's answer to the Tyrannosaurus Rex. In 1984, the Rich team started work at Dinosaur Cove which yielded up 5000 bones, but also involved underground tunnelling, dynamite, clambering down a 90-metre cliff and living in primitive isolation. Tom admits if they had known the beach site existed, the logistical nightmare of Dinosaur Cove would never have been tackled. Dinosaur Rocks has a rich fossil layer dating from the Early Cretaceous period (105 to 140 million years old), which runs across the beach and into the cliffs, containing an estimated 40 tonnes of fossils. It was deposited when Australia was still joined to Antarctica and was much closer to the South Pole.

Millions of years later and many degrees warmer, the dig team is slowly burning up in the harsh sunlight. Further up the beach, Mike Cleeland, Mary Walters and Amanda Kool break rocks that are not immediately promising into tiny chunks. Amanda is Lesley's daughter, and a writing student. Mary is a mature age palaeontology student and a

BACK then, instead of a flat sprawl of beach under a big clear bowl of blue sky, the dinosaurs would have seen a mountain either side, topped with snow, guarding a vast flood plain. The climate would have been cool, with long dark winters where ice formed on the streams and lakes. Through the centre of the plain there would have been a turbulent rapid river, carrying a rich load of bones and bodies and teeth, debris waiting to be trapped in the sediment layer until Kool and the gang set them free with their chisel.

The team leave mid-afternoon when the tide starts coming back in. Back at the house, which comes exquisitely kitted out in '50 suburban kitsch, it is coffee and Arnotts cream biscuits and everyone takes their shoes off. Mary hangs out the washing, creating a whole rotary clothesline full of jeans and flapping dinosaur T-shirts. Lesley is already at the microscope. "She is an exquisite technician," says Tom. "She really knows how to separate bones and rock, with a jeweller's touch. A lot of people can't do it."

Everyone else spreads a tarp in the back yard, sets out deck chairs and once again starts to chip at hunks of rock. It may seem dreary but one of Australia's greatest discoveries was made, just like this, from a previously unpromising bit of rock. It was Lesley who chipped away in the laboratory to reveal one of the few semi-articulated skeletons in Australia, the back half of young hipsilophodont, nicknamed "Junior". He had osteomyelitis in one hind thigh, but had lived with the condition for years (the bones even indicate where abscesses formed and burst, allowing pus to drain). A new vista of dinosaur love life was opened up. Someone must have fed Junior and looked after him while the infection was at its worst.

Families and kids can join the Dinosaur Club (\$12 a year or \$20 for a family), phone 543 4061. Mike Cleeland conducts a group package called "The Dinosaurs of Darkness", an evening slide presentation and fossil display, followed the next day by a half-day dinosaur hunt at San Remo. Phone (059) 567 883.



Pound for pound: Gary McWilliams gestures towards soggy sandshoes and sandy jeans and says "It's not as much fun as this all the time".