



## *Yellow-eyed Penguin News*

### Giant Penguin Ancestor

**A**n archaic penguin was about the same size and weight as a human adolescent. It had a bill twice the length of today's Emperor penguin and lived about 27 million years ago.

Dr Ewan Fordyce of Dunedin's Otago University studies fossils of extinct penguins. "Every species goes extinct", said Ewan, "1% by evolving into something else."

Fossilised bones of the oldest known penguin ancestor were found in Canterbury in the 1980s. The penguin lived 55 million years ago, 10 million years after the extinction of the dinosaurs. It was shaglike in appearance, and had a bending wing that could also flatten for underwater swimming. By 25 million years ago the *Platyptyes* penguin

had evolved, with huge swimming muscles and small legs. Like the modern yellow-eyed, this penguin was more agile in water than on land. It lived in a North Otago that was so warm, there were coconut trees.

Today's penguins, like their fossil ancestors, are related to the tube-nosed birds. Ewan's research shows they lived in much the same locations worldwide as do modern penguins. There appear to never have been penguins natural to the Northern Hemisphere but there was an underwater flying pelican that may have had a penguin-like niche.

Not all past penguins were the human-sized monsters of a squid's nightmare. Bones have been found of birds the same size as today's blue penguin.

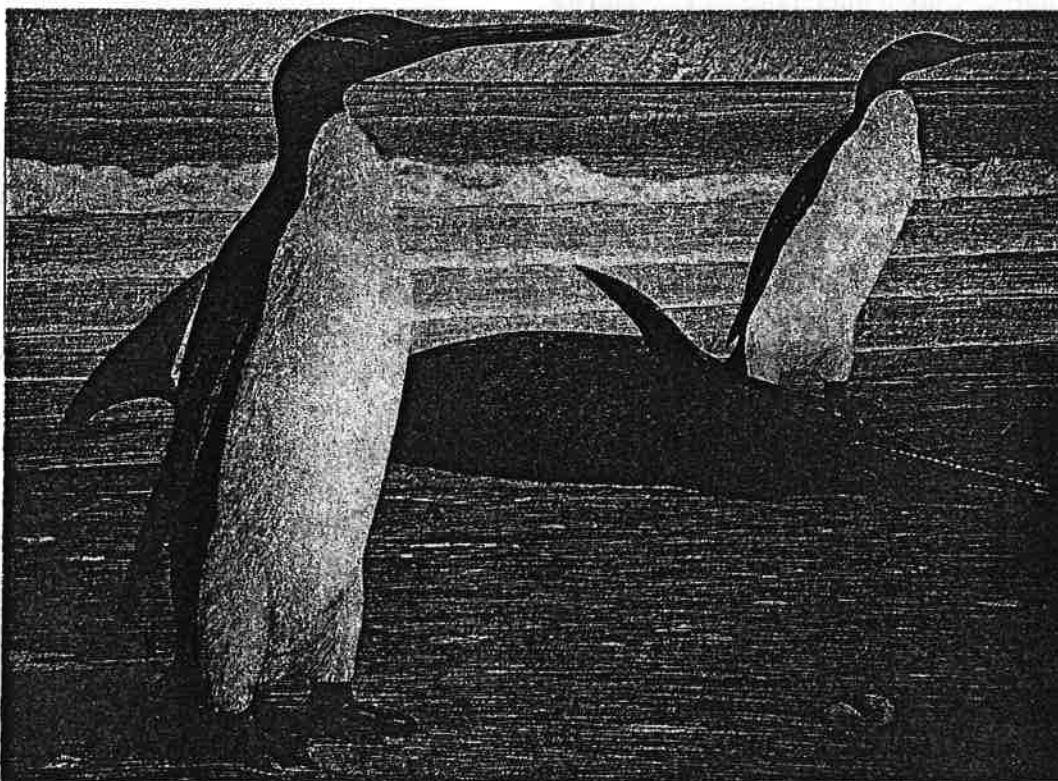


Illustration by Chris Gaskin.

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How do a group of penguins make a decision? *Flipper coin.*



## Below Average Season

**A** late breeding season, less nests and underweight chicks may have been the result of a food shortage this summer. No one knows quite what is going on out there in the sea.

We do know that cold sea water contains more nutrients than warm water - cold water sits at the bottom of the ocean, collecting organic waste from above but containing few organisms to break that waste down. Perhaps it is possible the recent hot, calm weather raised sea temperatures to a point where there were not enough nutrients for fish to eat. Less fish would mean less penguin food.

Whatever the correct explanation, there are some very skinny chicks around. A chick in mid February normally weighs about 5.5 kilograms. This year, chicks weighed in at an average 5 kilograms. Single chicks, without a sibling to share food with, tended to be a healthier weight than those chicks who had to share the fish collected and regurgitated by their parents. Chicks' fluffy down has normally developed into adult feathers by mid February. This February many chicks had still not developed their waterproof plumage so their fledging was delayed. On finally fledging they were still underweight so we can only hope that they have the body fat to face the next few months at sea.



Parent with chick by John Darby

## Children's Corner:

Dating and Mating -  
Question and Answer

By Tiffany James

*When do penguins start "going out"?*

From May till August adult penguins suss each other out to decide who would make a good parent for their chicks. They usually choose the same mate year after year but divorce is not unknown.

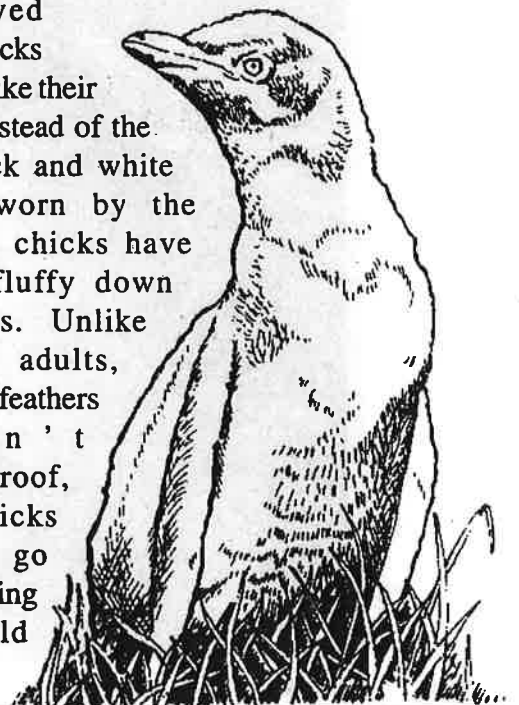


*How long does it take to hatch the chicks?*

Mum and Dad spend roughly six weeks taking turns to sit on their two eggs to keep them warm. The other parent goes out to sea and catches fish. In early November both eggs start hatching within hours of each other. But it takes about two days for the chicks to finally make their way out of the eggs into the outside world.

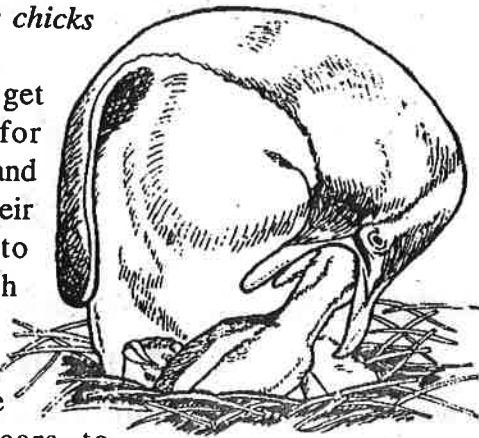
*What do the chicks look like?*

Yellow-eyed penguin chicks don't look like their parents. Instead of the sleek, black and white suits worn by the adults, chicks have grey, fluffy down feathers. Unlike the adults, chicks' feathers aren't waterproof, so chicks can't go swimming in the cold sea.



What do the chicks eat?

They can't get food for themselves and depend on their parents to bring fish back. Unlike our parents who have bags and cars to transport groceries, penguins have to swim home. So they eat the fish themselves then vomit it into the chicks' mouths. The same sentiment as when Mum or Dad used to mash up your baby food for you.



How do chicks change into teenagers?

Their grey down begins to fall out, revealing a shiny, grey juvenile coat when they are about four months old. They are now ready to swim in the sea for the first time.



## Win a trust membership

Hidden throughout this newsletter are five penguin jokes. It may not be immediately obvious but only one of them applies to the yellow-eyed penguin. Decide which joke does apply, give your reason and tell us by the 1st of July 1999. The winner, drawn out of a hat, will be credited with a year's free membership.

What do penguins wear on their heads?

Ice-caps.

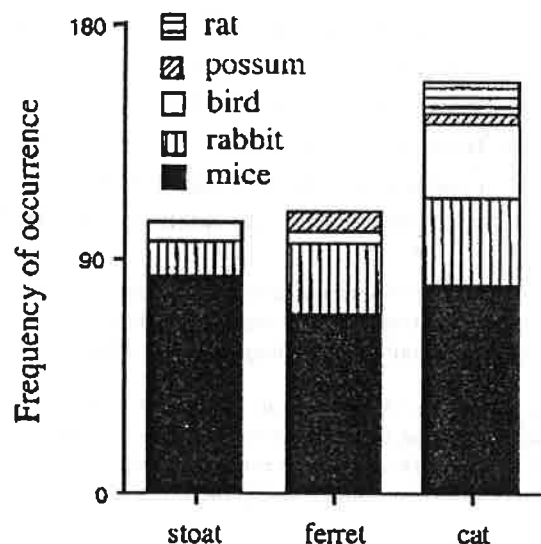


## Poisoning Penguin Predators

Yellow-eyed penguins evolved in a country relatively free of predators. They had no need to develop defences and could not quickly do so when people imported stoats, ferrets and cats. As a result, predation is one of the biggest threats to the penguins.

Predators have traditionally been controlled by manual trapping of individuals. It is effective but time consuming, expensive and requires expertise. A potential alternative is secondary poisoning of predators, being trialled over the last few years.

Predators can be poisoned indirectly by eating their poisoned prey. Stoats, ferrets and cats eat mice and rabbits, as well as eating penguins. If the mice and rabbits are poisoned, the penguin predators will eat sub-lethally dosed prey or scavenge the dead bodies, ingesting the poison and becoming poisoned themselves. Secondary poisoning is showing some promise but is not without problems.



The composition of cat, stoat and ferret diet. Alterio et al, 1996.

Nic Alterio (1996) targeted rabbits with brodifacoum poison and both rabbits and mice died. Stoats, ferrets and cats died shortly after poisoning, almost certainly from eating the poisoned rabbits and mice.

Ferrets reinvaded the area soon after the deaths of the previous residents and stoats were slower to reinvade. An immigrant ferret died 41 days after the original poisoning operation, suggesting the technique's effectiveness over time.

Because predator diet consisted mostly of mice, McKinlay et al (1997) focussed on poisoning mice. Mouse numbers did decline but their effectiveness as a vector of the poison is uncertain. McKinlay suggests it is possible that because mice are only one element of predator diet, the effect of their poison is diluted amongst the rest of the predator diet.

The study succeeded in reducing the cost of poisoning by using bait stations instead of hand-scattered pellets. Hiltrun Ratz also studied the cost-effectiveness of secondary poisoning (1997). Protecting one large yellow-eyed penguin colony from predators, cost the same by both trapping and poisoning. However, trapping several small, scattered colonies of a similar aggregate size costs almost three times the cost of poisoning those sites. She concluded that secondary poisoning is cheaper than trapping.

Secondary poisoning can reduce many mammalian predator species in a single poisoning operation. This avoids the imbalancing effects on the community of pest control programmes that target only one species, for example, diet switching of predators from introduced prey to native birds. However, it is still a new technique that requires more research before wider application in the field.

Alterio, N; 1996: Secondary poisoning of stoats, feral ferrets and feral house cats by the anticoagulant poison, brodifacoum; NZ Journal of Zoology (23), 331-338

McKinlay, B; Elbers, A; Ratz, H and Nelson, D; Protection of yellow-eyed penguins from predators; in Proceedings of National Predator Management Workshop, 1997, Department of Conservation, New Zealand.

Ratz, H; (1997) Introduced predators of yellow-eyed penguins, PhD thesis, Department of Zoology, University of Otago, Dunedin, New Zealand.

What do penguins drive?  
*Articulated trucks.*



## Out in the Field - what's happening in the trust's reserves

### *Otapahi - Otago Peninsula*

The trust's latest reserve is Otapahi, on the cliffs of Otago Peninsula. It borders farmland and a fence was needed to keep sheep from eating the young trees planted in the reserve. Very kindly, Community Trust of Otago came to the rescue with money for an electric fence.

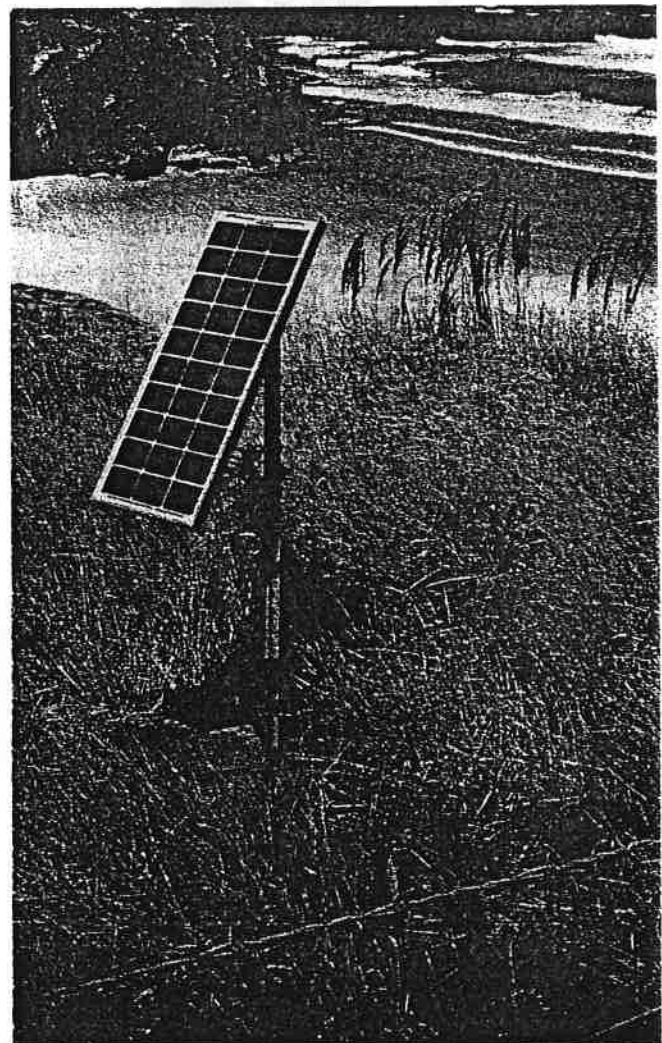


Photo: Stef Wade, It's electrifying!

It's no normal boundary fence - it's hot wired. A solar panel on site absorbs the sun's energy and converts it into enough electricity to power a wire running the whole 4 kilometre length of the fence. Young people from two of Dunedin's Conservation Corps carried fence posts for kilometres across terrain too difficult to negotiate by vehicle. Our neighbour, Des Neill also kindly helped Jim Ellison, trust Field Officer to install the fence.

Now the sheep will have to be content with their grass and the penguins can look forward to a future forest to build nests in.

1998 was the first winter that trees were planted at the new reserve. As an experiment, wire mesh protectors were left off, some at the time of planting. This left many seedlings vulnerable to being chewed by wandering stock but once the electric fence was erected the trees' grew very quickly. Many have now grown so much that they are far too big to fit inside a protector - the experiment worked!

A two year planting plan for Otapahi is in the process of being designed. This winter the trust is looking forward to the temporary help of two or three Task Force Green staff.

#### *Okia - Otago Peninsula*

There were about 15 nests this year. The dry summer necessitated a closure of the reserve which has about 2000 visitors a year. The reserve is jointly owned by the trust and the Dunedin City Council. Te Runanga o Otakou and the Department of Conservation also assist with management. Everyone was pleased when the management plan was finalised after years of negotiation and public consultation.

Volunteers were generous with their time over summer. Some removed lupin weeds, allowing room for the spread of native plants. Others

removed old wire mesh protectors from trees that have outgrown them. Some had branches growing through the wire mesh and volunteers were told by trust Public Awareness Officer, Clare Fraser, that what they were doing was just as important for conservation as rescuing a beached whale.

#### *Tavora - North Otago coast*

The ground has been so dry for so long at Tavora that 200 flaxes have been waiting to be planted since last winter. Jim has been regularly watering trees to keep them alive. Traps were set and maintained for two months to catch penguin predators, stoats, ferrets and cats. Nothing was caught which is good news because it shows there were no predators around - the 3 nests at Tavora produced 3 penguin chicks. The bad news is that, due to the deaths of adult birds in April 1998, 6 fewer chicks fledged this season than the 9 that fledged last season.

Penguins tend to mate for life. One particular pair at Tavora has been producing chicks for several years but one of the adults was amongst those killed by ferrets. The surviving penguin formed a new partnership that unfortunately, resulted in 2 infertile eggs this year.



How does a penguin build its house?

*Igloos it together.*



## Southlight Wildlife Penguin Viewing - free pass!!

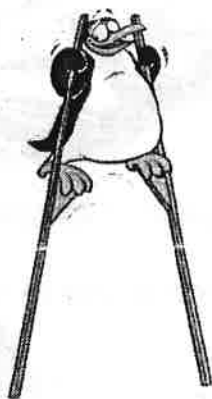
**A**t the tip of Dunedin's Otago Peninsula is a back-to-nature penguin viewing opportunity, Southlight Wildlife. The operation recently approached the Yellow-eyed Penguin Trust, offering to donate some of their profits to support the trust's work.

The highly valued support of Mainland Products continues as the financial backbone of the trust. We are also grateful to accept Southlight's offer to join the sponsorship team.

10 cents per visitor will be donated to the trust. There is also a donation box on site and brochures with information about the trust. The trust designed an interpretive sign for visitors, erected at the viewing hide.

Here's the best part for you, our New Zealand members - a free pass is enclosed! It can be used alongside a paying visitor. \$1 from each of these paying visitors will be donated to the trust.

So if you're in the neighbourhood, pop in and visit the penguins. You'll be saving money, supporting the trust and taking advantage of the great wildlife viewing opportunities at Southlight.



## Thank you

Mainland Products  
Ansett New Zealand  
Cooke Howlison Toyota  
Canon Copiers  
Southlight Wildlife  
WDS Armitage, Downie Stewart, Solicitors  
Otago Polytech Printery  
Converge  
CMS Advertising  
Tiffany James  
Hazel McLeod  
Mike and Margaret Hazel  
Catriona Matheson  
Maree Johnstone  
John Hodgkins  
DCC rates section  
Japan Penguin Fund  
Taylor McLachlan, accountants  
Don Anderson  
Radio Otago  
Wastecare Services  
Turnbull Carpet Cleaning  
Stone Environmental Inc  
Baltimore Zoo, USA  
Otago Girls High School  
DoC Conservation Corps  
Malcolm Cameron Conservation Corps  
Des Neill  
DoC Habitat Helpers  
Neville Mitchell  
Dianne Calvert

What does a penguins wear on rainy days?

*Its mackerel.*

