

CALM's tenth anniversary - looking back ... and forward ...

Ten years of technology

by David Gough

WHAT effects have the technological advances of the last decade had on the day-to-day work of CALM employees? Here, some staff members reflect on how they have been able to do their jobs more efficiently and effectively, thanks to such advances.

"It's important to remember that CALM always has been application-driven rather than technology driven," says Information Management Branch Manager Peter Bowen.

"If there are few or no substantial time-saving or quality gains to be made by using new technologies, they invariably stay on the distributors' shelves.

"With such a vast estate, it is important for CALM to maintain a consistent and reliable knowledge base of property boundary registration and survey records. This has led to the development of the CALM Tenure Information System (TINS).

"Records are now held in a comprehensive database that is accessible by CALM staff and provided to other agencies," said Peter.

As an outcome of this format for storing data, much of the information required to produce both general purpose and customized maps is available almost at the press of a key.

The 'new look' CALM 1:50 000 Land Management Series maps are being produced using this source data together with other geographic data using computer-assisted map-publishing technologies.

Cost and time savings

"Once the data is in hand, significant cost and time savings are provided through the use of these technologies," Peter said.

"Consistency of information also is provided, as the same data is used in multiple applications for planning, management and integration with other agencies."

Global Positioning Systems (GPS), using satellites, have revolutionized plotting and mapping work within CALM.

For example, staff can now accurately locate the boundaries of national parks to within a few metres, pinpoint fires with greater accuracy and plot the exact locations of rare plant populations and, moreover, find their way back there again.

Finally, staff from CALM's Science and Information Division can use GPS equipment when

setting up long-term monitoring sites in areas like the Great Sandy Desert. The sites can be left unattended for several years and then accurately relocated to retrieve the data.

Vital data collection

They can also now take powerful laptop computers into the field and begin processing data as soon as it is collected, or even begin writing reports at the end of each day's work.

Handheld data-recorders are another tool helping field officers in the collection and processing of vital scientific data.

Values once were written in a notebook and later keyed into a computer for processing. Now they are entered, via a keypad, directly into a compact data-recorder and then downloaded to a computer for processing back at the office.

Calculations now can be made and tables printed out in a fraction of the time it used to take, and visual presentation of the processed data can be prepared quickly using the graphing options provided in the same software package.

For more than 10 years, radio-tracking has been an integral part of understanding how and where native animals live. Radio collars (transmitters) are fitted to the animals, and receivers are used to track their movements through the bush.

Early versions, using transistor technology and bulky batteries, weighed several grams, whereas the latest versions, using microchips and tiny hearing-aid-type batteries, can weigh a mere half-a-gram or less.

As radio collars became more compact, the movements of smaller and smaller animals could be tracked. However, the smaller the unit, the smaller the batteries, and the shorter the battery life. However, improvements in battery technologies are already addressing this problem.

Another important use of radio-tracking is to check the survival of animals during translocation programs and to help. Newly developed collars have a feature to help indicate whether or not the animal is still alive.



Payroll officer Cheryl Leonard (standing) and data processing supervisor Kerry Ruddick working at a computer terminal. Photo by Veria Costello

An interesting story from CALM research scientist Paul de Tormes relates to the tracking of a woylie, which suddenly seemed to have become much less mobile.

The woylie had, in fact, been swallowed (radio collar and all) by a python, which was sleeping off its meal in a log.

"We had to operate to remove the radio collar," said Paul.

Snake and radio doing well

"Fortunately, the snake survived the operation and the radio collar was still working."

Senior research scientist David Pearson's work

with snakes has also benefited from advances in radio tracking technology.

"One of the problems we have with snakes, that they don't have a neck, so it was impossible to attach a radio collar," said David.

"But recently, very small transmitters have been developed that can be implanted into a snake's body.

"They have to be encapsulated in a material that can withstand body fluids, but which will not be toxic to the snake.

These transmitters are temperature-sensitive and emit a variable pulse rate, depending on the temperature of the snake.

"This means we now can accurately determine the snake's temperature, without disturbing it, even where it is up a tree or hidden in a log," said David.

Fingering the felons

DNA fingerprinting—a technique much used in forensic science—has been put to good use in wildlife management.

The award-winning article "To Catch a Thief" (LANDSCOPE, Winter 1992 issue) by CALM David Mill and Curtia University's John Withers exposed a scam operated by a small number of unscrupulous bird breeders who were selling eggs and hatchlings from the wild, while claiming they were bred in captivity.

"The DNA fingerprinting technique showed that in all, except one case, the young birds were of an age related to the adult captive birds," said David.

Ultrasound technologies

The recovery of the western swamp tortoise owes much to the development of ultrasound scanning technologies.

One of the problems in producing viable young was pinpointing the time the tortoises became fertile.

But the same technology that provided obstetricians with a tool to examine the human foetus also enabled Gerald Kuchling of UWA's extension system to map variations for egg production, thereby enabling the successful fertilisation and hatching of young tortoises. These young have since been released into the wild at the Ellen Brook Nature Reserve.

Databases of the State's declared rare flora are held at CALM's Wildlife Branch, and work is already under way to complete a database of rare fauna.

The information contained in these databases is invaluable to botanists and zoologists as well as wildlife officers and researchers.

Staff at the WA Herbarium have developed sophisticated interactive databases to help with the identification of plant species. Shortwave radio communication has been with us for almost 10 years, but the advancements in digital communication over the HF, VHF and UHF bands have enabled a highly sophisticated level of communication.

A field worker can now contact anyone in the world by telephone from an HF transmitter in their vehicle.

The technology also exists to send faxes and data via HF radio—although this is not yet used in CALM staff.

The local area networks (LANs) have now been introduced into several locations within CALM, and these allow for the sharing of resources and information within an organisation or research environment.

As the wide area network (WAN) expands to take its offices throughout the State, more rapid information exchange between the various divisions, branches and offices in different locations will become possible.

Computer-based electronic mail (E-mail) allows messages to be sent from one individual computer to another or, at the other end of the cable, to all the computers connected to the WAN.

But E-mail is not just for sending notes to one another, entire data files, documents, graphics and even moving images and sound can be sent through such systems.

New CONCEPT in accounts

Ten years ago, Cheryl Leonard was a drafting assistant. Then, she researched, drew by hand, coloured and lettered maps. Now, all of these tasks are carried out by computers, so for the past two years she has been a payroll officer in Finance Branch and in that time has seen the introduction of CONCEPT, which has helped streamline the department's accounting procedures.

"Before CONCEPT was introduced, Human Resources would inform me of all salary variations," Cheryl said.

"I would manually calculate annual leave loadings, higher duties and temporary special allowances, increment awards and overtime payments.

"Now, CONCEPT does these tasks, automatically calculating payments directly from Human Resources Branch input.

"It's just as well, because I now have more time to input overtime and fine duties payments, which were in large double overights."

Data processing supervisor Kelly Ruddick joined CALM's Finance Branch in 1985.

"In those far-off days we used an old-fashioned punched card machine to record and update salaries information for employees' pays. CONCEPT has taken care of it," Kelly said.

"Manual calculations of log book folios for 900 trucks are now automatically processed by a relatively new kid on the block called LOIS (Logging Operations Information System).



Database operator Kaye Veyroad uses a digitiser to validate the distributional data of some of the 150 000 entries in CALM's WA Herbarium specimen database. Photo by Donna Swan

"And the Government Accounting System (GAS) enables changes to be processed automatically for urgent payments. In the past, cash orders had to be hand-written."

Word processing

Perhaps the single most important development in the office environment has been the desktop computer and with it, the word processor.

Kerry Carmichael from Crawley can well remember the many hours spent typing and retyping reports—armed with drawers full of Tap-Ed, correcting ribbons and carbon paper. Fortunately, such concentrations are well and truly things of the past.

"We used to have to type a draft copy, which was passed back to the author for checking, then retyped and circulated for internal review and then typed again and submitted to a scientific journal. Referees' comments usually required further changes to the text, and the report invariably had to be retyped a third time," said Kerry.

Even the most humble word processor brought with them a certain freedom to rethink or correct whole passages of reports and to rearrange documents into the required format.

More up-to-date versions now allow users to layout pages and see how they will look when printed, edit for spelling and grammar, choose a variety of typefaces, add formulas, photographs, graphs or illustrations and produce complex tables, all before hitting the print key.

"And when you do print," says Kerry, "each copy is in clear and crisp as the first one—unlike the old carbon copies."

Desktop publishing

A major extension of word processors has been the introduction of true desktop publishing (DTP) programs.

In skilled hands, these very powerful pieces of software can transform the written word into a high quality, attractive publication.

Together with LANDSCOPE magazine, the CALM NEWS you are reading, all CALM leaflets, brochures, booklets and saleable publications are produced using DTP.

Other graphics software provides users with the ability to draw or scan and manipulate illustrations and photographs, create or customise type styles, or scan whole pages of text directly into a word processor instead of having to retype them.

Presentation software can be used to prepare professional looking 'slides' for overhead projectors. Gone are the coloured pens and rolls of acetate.

The developments in video processors will see staff able to mix live video and digitally-recorded sound with computer text and graphics to provide a dynamic audio-visual presentation. Such technology provides a powerfully persuasive tool for

those who influence decisions.

Fax machines have been around, in various forms, for a little more than a decade, but their popularity has grown rapidly in the past five years.

Text and images can be sent from one site to another for the cost of a telephone call and in a fraction of the time it takes by post.

The ability to check, confirm and disseminate information in a very short time makes this humble piece of office equipment an invaluable part of today's workplaces.

Fax maps can be sent from the fire scene by

CALMfire at crime and decisions made about the utilisation of resources is much shorter times, and time is of the utmost importance when fighting fires," said CALMfire manager Rick Sorensen.

So, those are just a few examples of how the technological advances of the past ten years are helping CALM staff in their day-to-day jobs.

Some of these advances have become very much a way of life, others have ones still to be explored. But who knows who will happen in the next ten years?



Technical officer Neil Thomas uses a Majellan Global Positioning System to locate the position of the malleefowl mound in left foreground. Photo by Tony Priest



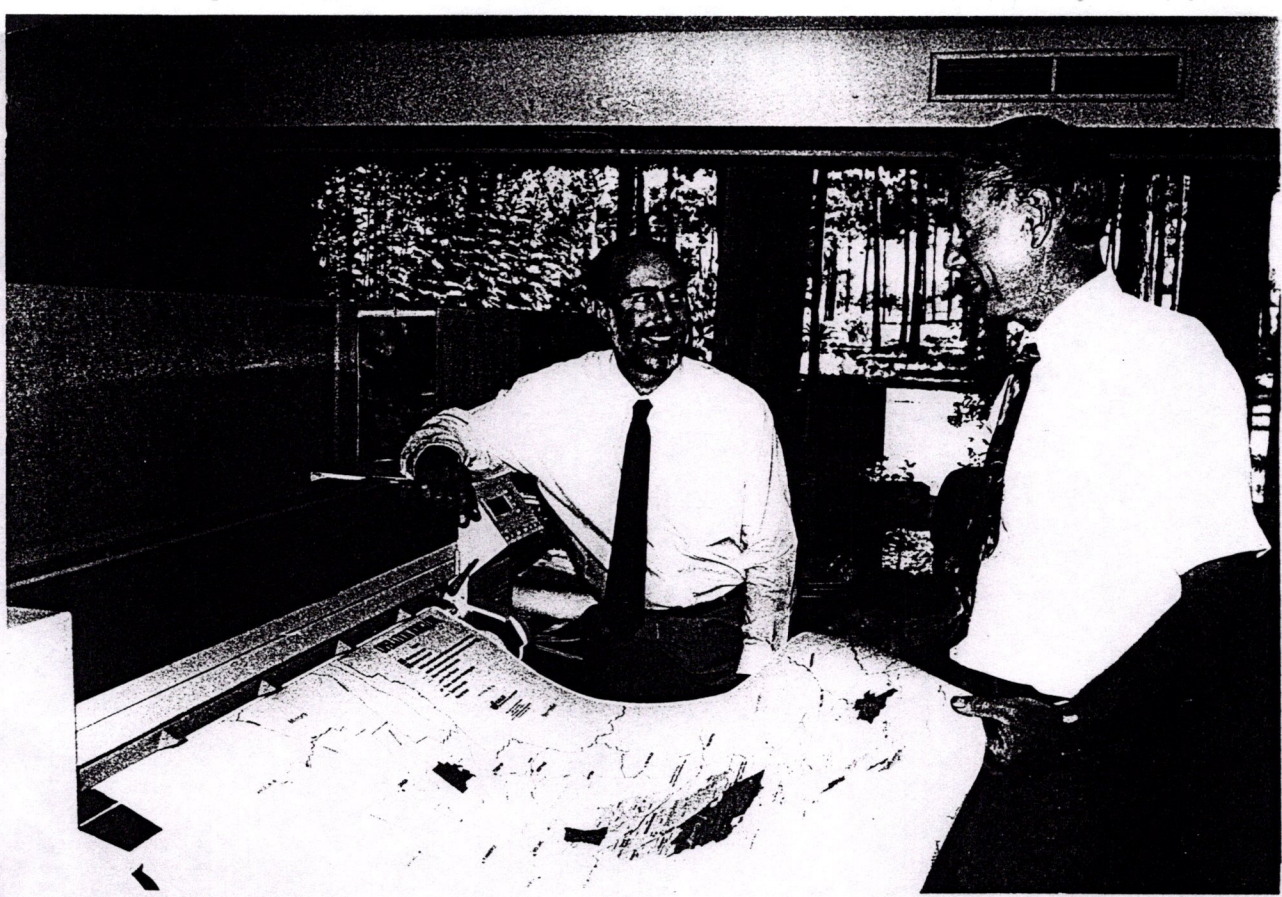
Checking an Operation Fireglow map at a computerised inkjet colour plotter in project leader Phil Prode, left, with project manager Roy Fieldgate. Photo by Veria Costello











On loan to Kevin Ryder of Wuthrop
Technology based @ MWA 16/11/1995

Ph: 380-2611

Fax: 382-1688

S:

To be returned

Signed: _____