

## Online learning builds northern knowledge



Photo: Roxanne Guesnon

Photo: Julie Crough

Left, Viki Kane with a Year 7 student looks through the Burning Issues module. Right, Taminmin High school students south of Darwin at the module's launch in May. Bushfires NT, who has also contributed to the Burning Issues module, provided a helicopter—to the delight of students—to douse the oval for the launch.

Imagine you are 13 years old and have just joined Dr John Woinarski's scientific research team in Kakadu National Park, to investigate what is happening to the northern quoll. Or you are learning how pastoralists, park rangers and Traditional Owners alleviate the risk of huge wildfires throughout many parts of northern Australia. It's all possible through EnviroNorth, an interactive educational website.

**E**nvironNorth <[environorth.org.au](http://environorth.org.au)> tackles some long-standing issues in sustainability and science education in northern Australia. Although savanna ecosystems dominate the top third of Australia, educational resources focus mainly on rainforest and reef ecosystems. EnviroNorth helps redress the balance so students from the Kimberley to the Top End and northern Queensland can learn about the environments surrounding them.

Online learning also helps overcome the disadvantages these students face: the areas in which they live are geographically challenging, with huge distances, small populations and a large and growing proportion of Indigenous youth.

Developed by a partnership between the Tropical Savannas CRC and the NT Department of Employment, Education and Training (NT DEET)—with significant input from teachers—the site is now being used by a range of schools in the Northern Territory, Queensland (particularly through the Primary Connections<sup>1</sup> science program), Western Australia (including the Kimberley Schools of the Air and the EcoFire project, pg. 8) and as far afield as Tasmania.

The site was launched in 2007 with three main sections:

interactive modules for students, comprehensive teacher support materials, and the CRC's Savanna Explorer (see box opposite page).

"The challenge was to provide a flexible, relevant and engaging approach for students," explained Julie Crough (TS-CRC) who along with Louise Fogg (DEET), led the development of the website and learning materials.

"We needed to develop resources that helped build capacity for teachers about tropical savannas and related sustainability issues as most new recruits to northern Australia arrive from southern states," she said.

Until EnviroNorth, there were no comprehensive online learner-centred resources for schools focusing on one of the few extensive natural areas remaining on earth—Australia's tropical savannas. The website's interactive modules, *Savanna Walkabout* and *Burning Issues*, aim to meet this need.

Designed for Years 7–9 students (middle years), the modules are based on current research and education in Natural Resource Management and Information Communication Technology. Each module has a series of learning activities and tasks that integrate videos, audio, animations, graphics and photos.



## Range of resources

EnviroNorth has three sections:

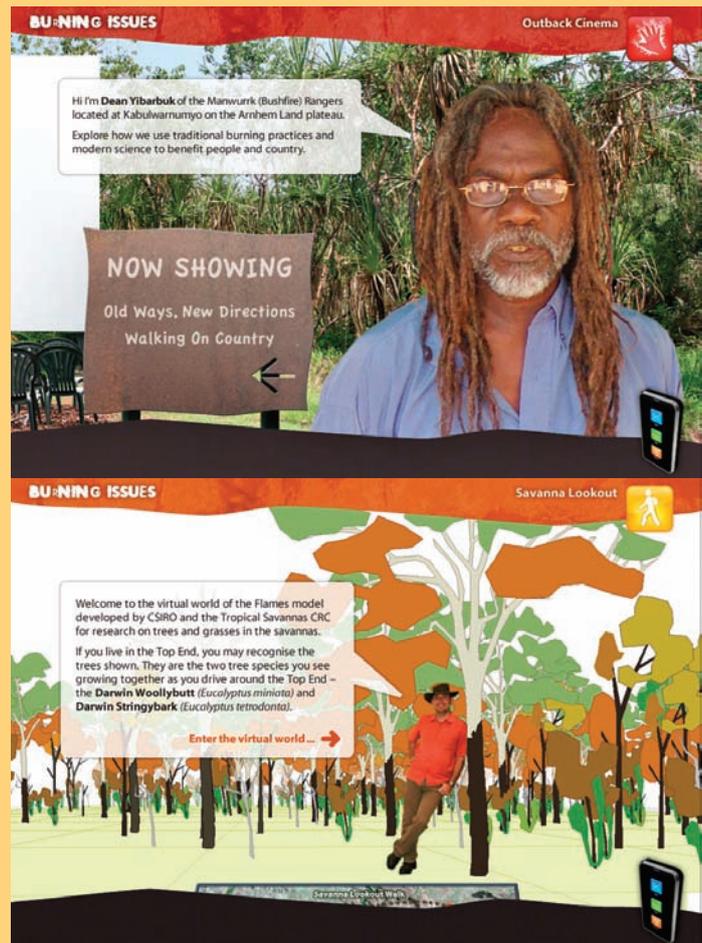
*Teach Savannas* supports classroom teaching and provides learning materials related to the student modules (in *Learn Savannas*) for the middle years (Years 7–9). It features learning plans, suggestions for assessment and curriculum links. Teachers can also use the CRC's Tropical Rapid Appraisal of Riparian Condition set of score sheets and notes for field trips.

*Learn Savannas* features structured, interactive modules, *Savanna Walkabout* and *Burning Issues*. *Savanna Walkabout* is full of animation, engaging graphics and mini-movies that emphasise not just the remarkable north Australian landscapes and wildlife but also the people who manage and know the country.

*Burning Issues* allows students in north Australia to explore the ideas, issues and people associated with the bushfires they see in their local environment.

*Savanna Windows* links students and teachers to an educational version of the Savanna Explorer website with information on the wildlife, landscapes, people and NRM issues of the tropical savannas.

Right: two of the pages from the *Burning Issues* module. Top shows the entry to Indigenous fire management and below the entry to the *Flames* computer simulation model. Fire ranger Dean Yibarbuk and researcher Adam Liedloff guide students to develop an understanding of key issues.



- Free CD-ROMs of both modules have been distributed to all schools in the Northern Territory and many schools in Queensland, Western Australia and other jurisdictions.

“It was important that the resources were online to provide access for all schools because nearly half the schools in the NT (and in northern Australia) are in remote or very remote areas,” said Julie. Teachers in remote schools requested the extra option of CDs to overcome unreliable internet access.

### Savanna Walkabout

*Savanna Walkabout* focuses on the diversity of tropical savanna environments. It also provides knowledge and ideas for ways that students can get involved in conserving biodiversity.

Case studies, the work of researchers and Indigenous perspectives are all integral to the modules. For example, Dr Linda Ford tells the story of the impact of the weed mimosa on her homeland on the Wagait floodplains south-west of Darwin and how the Rak Mak Mak Marranunggu People (White Eagle People) managed to control the weed. Based on this case study, students have the opportunity to develop simple food webs based on mimosa's impact on native species, including Mak Mak bush tucker.

In the *Meet the Researchers* section, students can learn about the ‘who, what, when, where, how and why’ of key issues concerning biodiversity in the north and also experience the passion and motivation of the researchers (Drs Sam Setterfield, John Woinarski, Ben Hoffmann and Michael

Douglas). In *Join the Researchers*, Dr John Woinarski invites students to ‘join’ his research team and mentors them through solving the problem of the northern quoll’s decline. The learning experience enables students to use scientific research as a model, to think critically and apply the skills they have learned.

### Burning Issues

*Burning Issues*, the latest module in EnviroNorth offers north Australian school students the opportunity, for the first time, to learn about the bushfires they see around them in a detailed, authoritative and stimulating format.

Jointly funded by Bushfires NT and TS-CRC, in partnership with DEET, it challenges many myths and misunderstandings about fire and why it must be managed for sustainability of people’s lives, property and the environment.

The module begins in a fire manager’s most recognisable vehicle: the helicopter. The student can move between campground, visitor’s centre, an outback cinema and take a savanna walk, to discover what various fire managers in northern Australia do.

The module also highlights some CRC-supported research and management. One is the *Flames* computer simulation model, a tool developed by researchers to explore the effects of fire on savanna trees and grasses. Here, students can use a version of the model to experiment with the knowledge they have gained in fire management issues.

[Cont. pg. 12](#) →



The website's resources for teachers are just as important as the interactive modules for their students. Pictured are teachers from Darwin schools on a field trip with scientist Ian Dixon, who is guiding them through the CRC's Tropical Rapid Appraisal of Riparian Condition (TRARC). The TRARC was developed for land managers and the manuals, score sheets and field guides are all available online—making it an ideal resource for teachers as well as those on the land.

Numbers of science teachers in northern Australia are few; EnviroNorth provides both materials and information—all within curricula frameworks—to help .

Photo: Ian Dixon

## Online learning builds northern knowledge

From  
pg 11

→ By choosing different fire frequencies and time frames, they can simulate the effect of different fire regimes over various time periods on stands of Darwin woollybutt and stringybark. Periodically, researcher Dr Adam Liedloff appears and puts pertinent questions to guide students to develop key understandings.

Another is the West Arnhem Land Fire Abatement (WALFA) project, where students enter the module's Outback Cinema to see how traditional Indigenous fire management is helping to contain greenhouse gas emissions.

They can see Indigenous fire managers at work and hear from Aboriginal Elders, all guided by Dean Yibarbuk of the Manwurrk Bushfire Rangers, who like Adam, guides and helps students to understand and appreciate the value of restoring traditional burning practices on country.

*Burning Issues* was developed in partnership with the TS-CRC (Julie Crough), the NT Department of Employment, Education and Training (Louise Fogg) and Bushfires NT (Leslee Hills), working together with fire managers, researchers and educators.

### How teachers use EnviroNorth

Teachers Viki Kane and Jenni Webber have taught Savanna Science learning programs, based on *Savanna Walkabout* and EnviroNorth, for Years 6–7, at Humpty Doo Primary School. Their integrated programs culminated in tasks such as claymation films, where students used webcams and scripted short films on conserving savanna environments.

“Our students thoroughly enjoyed the ability to get out into the bush and investigate ecological and historical aspects of the savanna,” said Viki. More recently, the two embarked on a new integrated learning program, *Living in Savannas* at Taminmin High School.

EnviroNorth's modules are fully supported by teaching materials with suggested learning plans, ideas on assessment and curriculum links. Overarching understandings or

‘big ideas’, understanding goals that identify what students should know and do—the concepts, processes, skills and key questions—all help to focus the teaching/learning program towards the intended outcomes.

Jenni explains that the website has proved to be well-designed for both teachers and students to use.

“It is unique in the fact that it teaches key understandings and skills that provide a springboard for them to be actively involved in conserving, maintaining and restoring biodiversity in their local environment,” she says. “Our students are aware that they are conducting real investigations and that their results are helping us better understand their local environment.”

As part of the school's program, students also work with practising scientists to learn skills that include the Tropical Rapid Appraisal of Riparian Condition, see picture above.

Teacher training lecturers at Charles Darwin University have incorporated various aspects of *Savanna Walkabout* into their units as part of a pilot project, *Mainstreaming Sustainability into Pre-Service Teacher Education Across Australia*, which is being conducted by the Australian Research Institute in Education for Sustainability (ARIES)<sup>2</sup>.

### Future modules

Julie and Louise are now working on the final two modules: Cattle Country and Indigenous Caring for Country. They continue to work with teachers and students to ensure the existing modules are used as widely as possible.

### Footnotes

1. Primary Connections is a National program that promotes linking science teaching with literacy to enrich learning for students. <[www.science.org.au/primaryconnections/](http://www.science.org.au/primaryconnections/)>

2. ARIES's core business is to undertake research that informs policy and practice in Education for Sustainability across a range of sectors including business and industry, school education, community education, further and higher education. <[www.aries.mq.edu.au/](http://www.aries.mq.edu.au/)> →