



Turtles moonlight in safety

A large green turtle at Thevenard Island off the west coast of WA.

During their summer breeding season since time immemorial, green and loggerhead turtle hatchlings have popped out of the sand on the islands and beaches of north-west Western Australia. The little battlers take one blink and belt for the ocean to escape the marauding birds and other predators waiting to pluck them off.

Some marine biologists believe the few hatchlings that manage to escape navigate their way out to sea by swimming towards the moon. This has raised concerns that giant gas flares on the gas and oil rigs and production facilities that dot the North-West Shelf might disorient the turtle hatchlings. Dozens of flares light up the night sky all over the Shelf and hatchlings have been seen scrambling across the floors of production offices, crossing roads and getting lost in the scrub.

West Australian Petroleum's gas production facility on Thevenard Island, 20 kilometres off the WA coast, called in Dr Peter Hick from CSIRO Exploration and Mining to survey all visible light sources around the site to determine which lights were disturbing the turtles.

'Very few wavelengths of light pass through water,' Hick says. 'It's limited to wavelengths of about 425-600 nanometres (nm): the blue-green part of the spectrum. And we can be pretty certain that the eyesight of turtles is limited to this range.'

Previous studies had shown that the wavelengths most disruptive to turtles were in the range of 300-500 nm. 'We were concerned that the gas flares might contain a lot of blue light,' Hick says.

Hick and his team used a fibre-optic spectrometer hooked up to a laptop computer. 'We sat on the beach at night, at turtle eyeball level, and took shots of all the light the turtles might be able to see,' he says.

They found that the dominant light coming from the drilling rig and production facility was in fact white-coloured, mainly fluorescent and mercury vapour lights. These lights peaked at wavelengths around 420 nm and were probably very disruptive to turtles. Other lights included orange-coloured sodium vapour lights which were dominated by wavelengths above 600 nm, and therefore beyond turtle vision.

It turned out that the gas flares had little blue light and were dominated by the orange-red end of the spectrum, which can't pass through water.

'The worst lights were those on the tennis court and the local jetty,' Hick says. 'There was a string of the most magnificent mercury vapour lights all the way down the jetty which were left on 24 hours a day. It was like Disneyland.'

West Australian Petroleum changed most of the onshore white lights and shielded the rest. Many of the white lights on the offshore rig were also recommended to be changed to orange or shielded. The EPA and the Western Australia Mines Department have since made light audits compulsory on all North-West Shelf rigs.

Philip Kofoed

Far left: A drilling rig at night.

Above left: Mike Caccetta of CSIRO Exploration and Mining prepares to take spectral measurements.

Left: Turtles on the beach at Thevenard Island. WA Petroleum drilling rigs can be seen on the horizon.

