Robert Kam Davies

Troubled Waters

The old expression 'pour oil on troubled waters' took on a sinister irony when the *Torrey Canyon* oil spill befouled the beaches of England and France in 1967. Closer to home, the *Korean Star* ran aground 30 km south of Ningaloo Reef in March 1988, and a derailment at Pinjarra in July 1988 resulted in the discharge of diesel into a drain leading to the Peel Inlet.

Neither of these local incidents were environmental catastrophes, but they sound a clear warning. How well prepared are we to cope with the threat of oil and other pollution? Liana Christensen investigates.

YOU are driving home from work in the pouring rain when suddenly the driver of the truck in the left-hand lane brakes. He skids, loses control and the truck tips its contents into the middle of a suburban intersection. You thought you noticed one of those little signs on the back warning about hazardous chemicals. What now?

Another possibility: perhaps you love to go running on the beach just after dawn, when there is nobody else to share the pure solitude. What if you got there to find the sand stained black, and the oily heaps of seaweed littered with dead and dying birds? What would you do? Cry? Ignore it?

Nobody likes to think about such a possibility, but, fortunately, Federal and State authorities have not taken a head-in-the-sand approach to potential pollution crises. If you were the first person to discover such a disaster, it is comforting to know that a phone call to the appropriate authority (see box) could mobilise an impressive array of helpers ranging from the Defence Department to volunteer wildlife rescue groups.

Jiri Lochman

Oil polluted pelican.

Federally, the responsibility for pollution control rests with the Department of Transport and Communications. They have prepared a National Plan to Combat Pollution of the Sea by Oil. This plan is designed to mesh with State and local contingeny plans, and gives clear guidelines about which authority is responsible for what aspect of control. It lists appropriate tactical responses, and also details the locations of stockpiles of necessary equipment. In a real emergency, the Defence Department can be called upon to shift personnel and equipment to combat the threat as swiftly and efficiently as possible.

Within W.A., the major authority dealing with pollution is the Environmental Protection Authority, but the Department of Marine and Harbours is in charge of any operations within harbours and ports under their control. The Fremantle Port Authority oversees shipping movement within Fremantle, and stores special equipment for the containment and cleaning up of oil spills. Depending on the location and nature of the hazard, the Fire Brigade, the State Emergency Service, the Police and the Water Authority may also be involved.

With so many groups involved, it is essential that sound organisational structures and chains of command are in place ahead of time, because in a crisis situation you have to react quickly to complex problems. The Department of Conservation and Land Management (CALM) becomes involved whenever there

Kwinana industrial estate.

Wade Hughes

is a danger to wildlife, or if the pollution threatens a national park, marine park, nature reserve or State forest.

In order to be well-prepared, CALM liaises with the State Committee for Combating Marine Oil Pollution, and is a member of the State Counter Disaster Advisory Committee. In an emergency we may advise on the special protection localities, identify specific wildlife concerns, gather intelligence, monitor things such as oil spill movement or the movement of a chemical through a drainage system, and carry out clean-up procedures on CALM estate. We also contact volunteer groups to assist with wildlife rescue and rehabilitation or clean-up.

Interestingly, an extensive history of dealing with wildfires means the Department has a ready-made internal framework enabling swift mobilisation and a flexible, efficient response to environmental threats. 'Large fire organisation' principles and practices are often used in response to pollution crises. A good example is the use of fire spotting aircraft to monitor the rate and direction of an oil spill spread.

Once the alarm is raised, what can actually be done? Remedial measures depend upon the type of hazard, and whether the problem is chronic or acute. Whoever is first alerted, which might be anybody from the police to a regional radio station, should ensure the appropriate authorities are contacted

An urban road accident involving a truck full of herbicide, for example, will require a different combination of experts than an oil spill in Cockburn Sound.

It is essential to verify and assess the accuracy of any reports. It is common knowledge that eyewitness accounts can be notoriously unreliable. The recent derailment at Pinjarra, for instance, yielded several conflicting stories, including a totally fallacious claim that there was a vehicle trapped under the upturned wagons! (In much the same way, rumours ran rife during the Augusta whale rescue of August, 1986).

Suction of spilled oil from Fremantle Harbour. Jim Lochman

IN AN EMERGENCY...

Oil pollution of sea and/or inland waterway.

Marine and Harbours State Oil Pollution Combat Committee: Captain Spencer, w. 335 0888, a/h 364 4949.

Captain David Oliver, w. 335 0888, a/h 528 2584.

Fremantle Port Authority: 24 hour number 430 4911, a/h 4304962.

Commonwealth Department of Transport: w. 323 1700, a/h Captain Clark, 383 8554.

Land emergencies involving oil, chemical or gas.

Fire Brigade/Police: 000.

Environmental Protection Authority: w. 222 7000, a/h 008 018 800.

If there is any threat to wildlife, national park or marine park, nature reserve or State forest: Department of Conservation and Land Management: 364 0733, a/h 401 8183.

When reporting an emergency, the most vital information is location, followed by the nature of the emergency. You should also give your name and a contact number.

Top priority is, of course, given to any potential threat to human life. Next it must be decided whether or not there is a serious threat to the environment. E.P.A. officers will make such decisions, with advice from CALM on wildlife or environmentally sensitive areas under their protection. Information on hazardous chemicals is available from the E.P.A.'s chemists, and Chemistry Centre (W.A.). The Fire Brigade is the equal any of authority in the world in its knowledge of how to deal with hazardous substances. It has the most comprehensive data base. The Fremantle Port Authority has access to two computer programs: 'Harwell Chemdata' which provides information on 65 000 chemicals, and 'Toxichem' which details 17 000 chemicals in use in Australia.

The following is an excerpt from a wildlife officer's report after an incident in February 1987 when a factory fire in Welshpool led to the suspected pollution of Wilson Park Wetland:

...I alerted key members of the Waterbird Volunteer Group (Fauna Rehabilitation Foundation) to the problem and proceeded to Wilson Park, a tidal wetland on the Canning River, where I spoke to police officers. I was informed that officers of the Waterways Commission had installed oil containment booms across the drain (where it runs into the wetland) to prevent the spread of oil into the wetland itself. I was then requested to contact Police Chief Inspector Barry Clay (emergency controller) at the factory fire site. As it was nearly dark,

Cleaning Up Our Own Backyard

Robert Karri-Davies

S. Vellacott/Courtesy E.P.A.

Old-fashioned cyanide tailings pond (above).

The Seven Mile Waste-Oil Pits at Karratha (left) and one of its victims (below) - a Red-Necked Avocet.

S. Vellacott/Courtesy E.P.A.

As well as accidents and emergencies, there have been some chronic problems for wildlife with things such as oil dumping pits and the cyanide pits used in the goldmining industry.

A recent example was the 80% death rate among waders (birds) affected by oil at the Seven Mile Waste Oil Pits at Karratha. (This problem has now been dealt with). Birds and animals can mistake oil and cyanide pits for stretches of water. It is a tragic error. Cyanide, particularly, means an agonising death, as the bird or animal bleeds internally and externally.

In the past there has been mass mortality of Budgerygahs, waders, kangaroos, birds of prey and other species. Today, most waste pits are designed to avoid environmental problems. Appropriate measures include: covering them, making them smaller and much less attractive to birds and animals by removing trees which offer roosting and cover; fencing; and raising the levy banks.

Environmental awareness has increased substantially over the last twenty years, and many industries have changed their approach to environmental issues (sometimes voluntarily; sometimes due to increased penalties for contravening laws).

There are now very stringent environmental guidelines. Complex conditions are attatched to exploratory oil leases, for instance. Environmental impact statements must be prepared prior to work commencing, and there must be contingency plans covering possible emergencies such as a blow out on an oil rig.

Industry and conservation are not always incompatible. Barrow Island, for example, is an A-class nature reserve. It is also an oilfield. With careful planning and enormous care both can continue to comfortably coexist.

an inspection of the wetland was not undertaken.

At approximately 20:00 hours I conversed with Police Chief Inspector Clay who informed me that there was the possibility that dangerous chemicals may have polluted the water used to douse the fire and that this run off water was flowing through storm water drains into the open drain discharging into Wilson Park.

Water samples had been taken to Chemistry Centre (W.A.) for analysis. ***I was warned by Mr Clay not to allow anyone into the Wilson Park Wetland to recover affected waterfowl until the result of the analysis was known, as rumour had it that PVC pipes disssolved when water from the drains was pumped through them.*** *(People living adjacent to the drain pump water from it for irrigation purposes). Other unconfirmed information indicated that a number of Long Neck Tortoises had died in the open drain.*

Although this incident proved to be very minor, and had no detrimental effects on the environment, it does serve to illustrate several key points. A selection of different authorities was involved. Most importantly, a control centre had been established, which facilitated communication. CALM was notified because of a possible threat to wildlife, and, in turn, notified volunteer groups. Rumours abounded - dissolved PVC pipes and dead Long Neck Tortoises proved to be figments of someone's overactive imagination. Nonetheless, quite correctly, steps were taken to ensure humans weren't put at risk until chemical analysis proved the rumours unfounded.

Oil spills are the other type of acute pollution problem. The two accidental causes of marine oil pollution are: big tankers carrying crude oil can be ripped open on a reef, as happened with the *Korean Star* off Carnarvon, or in collision with another ship; and human error - a wrong valve may be opened, releasing oil. Some tankers, mainly in the Japanese fleet, still wash their tanks out at sea by sluicing them with heated seawater and pumping the resulting mess back into the ocean. Fortunately, most tankers now use a system where waste oil is loaded in such a way it can be taken back to refineries and re-used.

J. Ottaway/Courtesy E.P.A.

The wreck of the *Korean Star*.

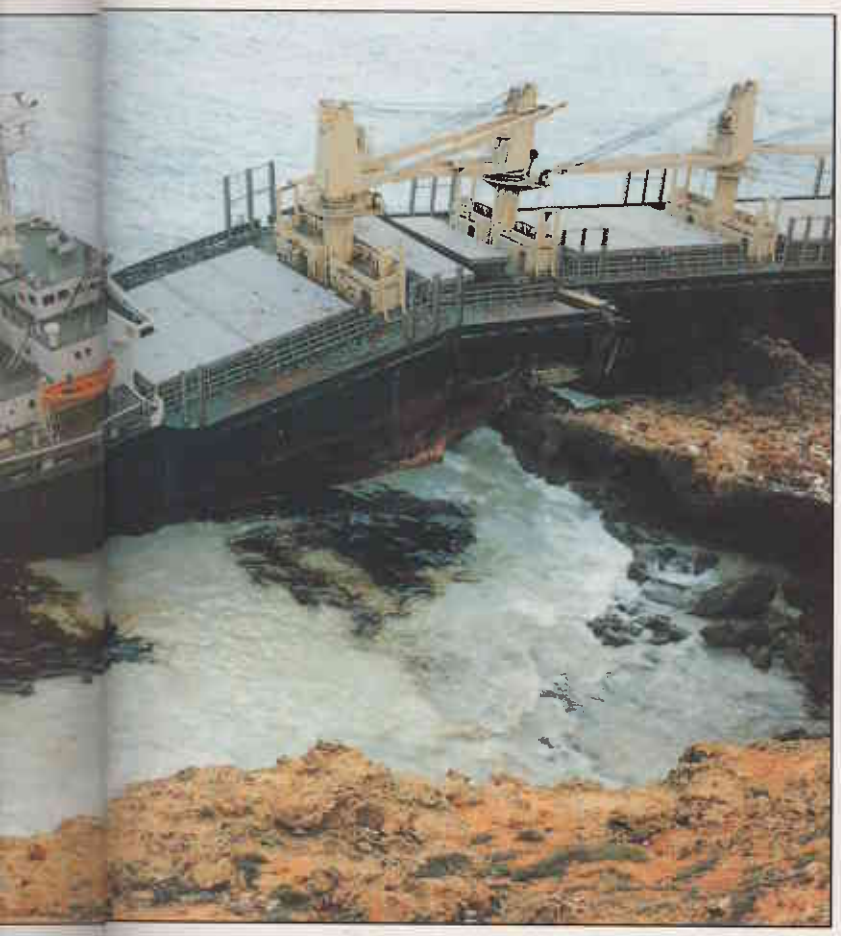
Whatever the cause, however, the effects of an oil spill can be disastrous. It all depends upon the location of the spill, the type of oil, and the weather conditions. A spill of diesel in the open ocean far from any area of particular environmental sensitivity may be no big deal, unless it is a fishing ground for seabirds. Diesel evaporates rapidly, particularly when emulsified by wave action in rough conditions. A major spill in an evironmentally sensitive area like Cockburn Sound, however, could be catastrophic.

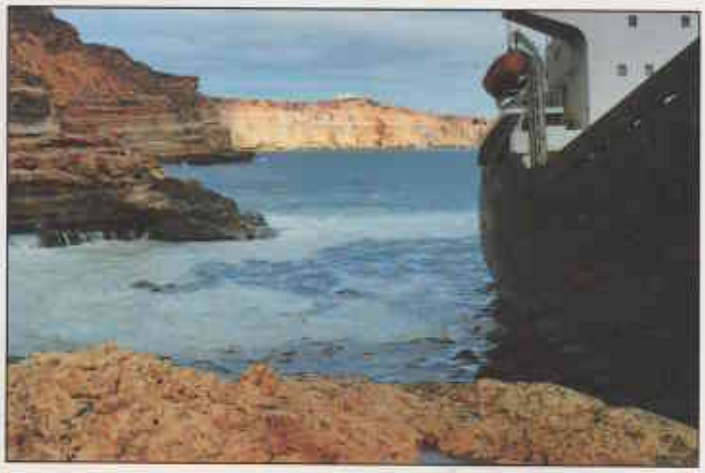
People tend to think immediately of the visible effect on waterbirds and the shoreline, but there are many other hidden victims and secondary effects. Beneath the surface of Cockburn Sound, for instance, there are seagrass beds, fish nurseries, many marine vertebrates, such as dolphins and sealions, and invertebrates, such as shellfish and starfish. It's hard to imagine what to do with a 150-200 kg sealion covered in crude oil. It would be difficult to catch, let alone treat.

There are also several island nature reserves which are breeding grounds for birds, some of them uncommon on the coast, such as Fairy Penguins on Penguin Island. Fairy Penguins enter and leave the water by night, and would have no chance of distinguishing oil in the blackness.

Oil destroys the waterproofing of birds' plumage, causing loss of insulation, decreased feeding efficiency and eventual starvation. In birds and animals toxins are absorbed through the skin, which may become red, inflamed and burnt. It also burns the eyes. The waterbirds and vertebrates suffer not only from being covered with oil but also from ingesting it. They may ingest oil in several different ways: by preening or grooming, drinking polluted water, or eating a food source which is already contaminated. Once ingested, oil will cause gut inflammation, gut ulceration and absorption of toxins.

The response to oil spills is based upon informed decisions about the extent of the environmental threat. If action is deemed necessary then several steps will be taken. Once the flow of oil has been stemmed, a





J. Ottaway/Courtesy E.P.A.

W.A.N.

Oil from the *Korean Star* (top).

Volunteers arrive to clean up Penguin Island (above).

Oil containment booms being launched from Fremantle Harbour (below).

plane may be taken up to monitor the size and movement of the spill. Then booms, which are large, orange, inflatable 'sausages', can be used to contain the slick or prevent it travelling in a certain direction. The oil can be skimmed with special equipment, or absorbed by sorbents such as straw. In some circumstances dispersant chemicals may be used, but these must be of low toxicity as approved by the State Combat Committee, because dispersants may do worse damage than the original spill. The use of dispersants on oil slicks requires prior approval from the on-scene co-ordinator. If necessary, volunteers may be called upon to assist with wildlife rehabilitation and beach clean ups.

CALM averages only one or two pollution 'incidents' per year. Trusting to luck does not suffice, however, and it is reassuring to know that all the right organisation and equipment is in place to avert the worst effects of any future crisis (see box, page 22).

Jiri Lochman

What More Can I Do?

There is certainly a role for the concerned individual, especially when it comes to helping wildlife. You need to be more than just well-meaning, however, because the wrong treatment of affected fauna is often worse than no treatment at all. It is also essential that any voluntary actions do not conflict with the plan of the on-scene co-ordinator. The most practical thing to do, therefore, is join one of the volunteer rescue groups which are contacted in an emergency. Then you will be kept informed of the most up-to-date methods, and there will be improved communication between all participants in the operation.

Sue Smith of the W.A. Native Bird Hospital has had over ten years' experience as a volunteer, and she initiated and coordinates a Wildlife Carers List. She also runs a Summer School course at the University of W.A. on the 'Care of Sick and Injured and Orphaned Wildlife'. If you are interested in being of assistance contact Sue Smith on (09) 295 1588.

The Waterbird Conservation Group also has extensive experience in the transport, care and rehabilitation of waterbirds. Contact Joan Payne on 397 6380 or Jean Canaway on 384 1564.

If you live in the South-west FAWNA (Fostering and Assistance for Wildlife Needing Assistance) have an excellent record for helping fauna. If you wish to join them contact Rita Watts on (097) 522 258.

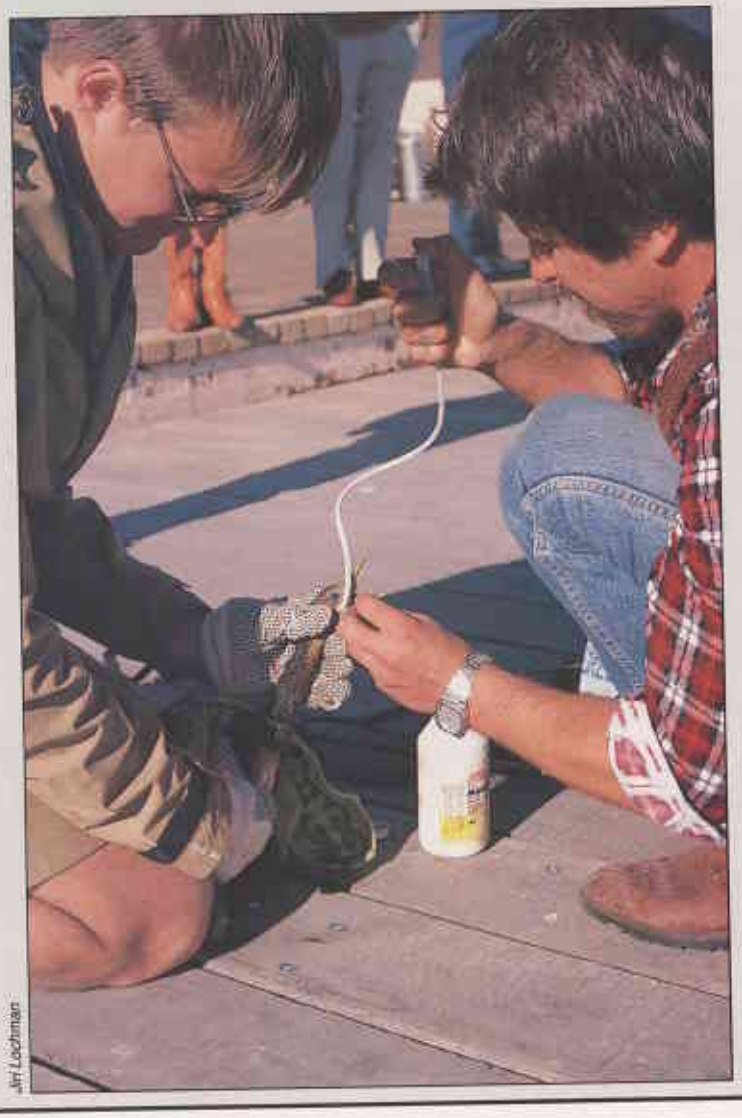
The Fauna Rehabilitation Foundation acts as an umbrella group for these and similar groups. For further information ring 249 3434.

S. Vellacott/Courtesy E.P.A

Jiri Lochman

The price of progress (above).

Members of the Waterbird Conservation Group set out to rescue a cormorant (left) and treat it (below).



Jiri Lochman

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EDITORIAL

In W.A. the concept of marine conservation reserves was firmly established in 1984 when the CALM Act was passed, with provision for Marine Parks and Marine Nature Reserves, vested in the National Parks and Nature Conservation Authority.

Since 1984 two major Marine Parks have been declared in W.A: Marmion and Ningaloo.

This is a new field in W.A., and there are no local precedents to guide us in resolving the many management issues which have emerged.

A first consideration has been that fishing is already controlled under the Fisheries Act. It would be foolish for CALM to attempt to establish itself as a fisheries management agency. A policy decision has been made that any fisheries in Marine Parks will be regulated under the Fisheries Act.

A more philosophical problem has been that many citizens, although generally sympathetic to the conservation cause, are unaccustomed to the idea of having parks and reserves in the sea. The idea that the sea is a public common where anything and everything goes is still well entrenched in public attitudes. Yet there are many terrible examples around the world where coastal environments and their resources have been devastated by excessive and improper use. In W.A. we have not reached that point.

W.A. can be proud of its fisheries management record, based on the principle of sustainable use for posterity. Development of a marine parks and reserves system along our coast is another essential part of the overall objective. It is to be hoped, then, that our first initiatives in this direction will receive public support.

PINES

How can less than four per cent of the State's area supply us with all our timber needs, and save the hardwood forests at the same time? *Details on* ***page 28.***

BORERS

Now you ***can*** *be sure there are no borers in the door. Well, if they are there, at least you'll know what to call them after reading the article on* ***page 42.***

TROUBLED WATERS

Does the very word pollution make you feel powerless? Discover what you can do to help the wildlife victims on ***page 20.***

WALL OF MOUTHS

It's a fish-eat-coral world, but what do the coral eat? Find out on ***page 32.***

FOREST RENEWAL

What is the connection between the poets' of the First World War and W.A's forests? Find out on ***page 56.***

Jewel Of The Kimberley

What do you mean frog? In my home I am a prince. After all, Prince Regent is the only mainland reserve where all of the original animal species remain. Meet the rest of them on ***page 47.***

Hills' Belles

When Perth looks out its backdoor in spring the Hills are ablaze with colour. Your field guide to some of our glorious wildflowers starts on ***page 4.***

Gather No Moss

The trouble with lichen is that up until recently it wasn't protected flora. Now lichen and their relatives - mosses, liverworts and algae - have joined the rest of the State's flora. See ***page 54.***

Right On Track

Is a high-tech wilderness trek a contradiction in terms? Find out how 4WDs and conservation can co-exist peacefully on ***page 12.***

ATTENTION ADULTS!

Sick of taking the anklebiters to the same old national parks and camping spots? Put them to work for you. If they enter the kids' competition on ***page 63*** they could win two beautiful books on all the best picnic and camping spots between Perth and Eucla.

Cover Photo

Magpie Geese take off from the Ord River.

Photo: Richard Woldendorp.

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