TREATMENT OF OILED SEABIRDS

A pamphlet produced by the Royal Australasian Ornithologists' Union dealing with the treatment of oiled sea birds is being distributed in large numbers throughout Australia.

The information given and the treatment recommended, prompted the editor to look at other sources dealing with this subject. As a result it appears that there are conflicting views held by the various authorities as to the best methods of treating oiled sea birds.

First let us look at the pamphlet distributed by the R.A.O.U. which reads:

"Conservation and pollution, have become major issues of the Seventies. This growing awareness and concern has led to the Royal Australasian Orinthologists' Union arranging the publication of this brochure as a practical means of helping preserve the environment.

Marine oil spills often cause contamination of sea birds. However, with the proper "first aid" and care, a contaminated bird can be saved. This pamphlet is designed to show how. It is based on overseas and local experience, but testing and experiments regarding treatment are continuing in many places. While giving some positive steps to be taken, measures to be avoided are also included. A central "nerve centre" to deal with large-scale emergencies has not yet been established in Australia although such centres exist overseas. It is hoped that a similar establishment will soon be possible here.

Oiled fairy penguins awaiting treatment. (Photograph by courtesy of W.A. Newspapers Ltd.)

Rehabilitation has so far been mainly devoted to the Fairy (or Little) Penguin, *Eudyptula minor*, the species most commonly affected here. Because penguins cannot fly, they are more closely confined to the sea than are other seabirds.

The following methods of treatment are directed towards penguins, but they are similar for all oiled seabirds, although adaption for different species may be needed.

This pathetic-looking Little Black Cormorant was soaked with oil on the Swan River. (Photograph by courtesy of W.A. Newspapers Ltd.)

Do not try to rehabilitate a bird yourself if you are inexperienced in handling birds and there is more expert care available.

Warning. Almost all native birds are protected. You should therefore seek advice from your local fauna authority after the first urgent steps have been taken.

An oiled bird will probably be suffering from all five of the following:

Shock. Cold. Starvation. Feather damage. Poisoning.

TREATMENT:

Shock. *Don't chase the bird.* Approach slowly and use a landing net or throw a blanket over it. Wear gloves for protection. Place the bird in a box small enough to restrict its movement, using a separate box for each bird.

Cold. Oil in the feathers allows water to penetrate, thus destroying the natural insulation.

Transport the bird quickly to a box large enough to allow it to move around easily. This should be placed in a quiet room warmed to about 70-75 deg. F. where there is a minimum of human disturbance. Place clean woollen material without loose threads, thick layers of newspapers or plastic foam, on the floor. This floor covering should be changed frequently to avoid infection.

Avoid Crowding. Birds of different species should be separated.

Do not wash.

Do not use straw or grass because these can lead to diseases of the lungs.

Starvation. When a bird suffers from cold or lack of food, it uses up its body reserves and becomes emaciated.

To help relieve irritation caused by intake of oil, the first feeding should be preceded by a dose of about one dessertspoon of either codliver oil, paraffin oil, Kao Magma or similar medication.

Feed penguins with small fresh oily fish such as pilchards up to six inches long. If these are unavailable use squid, or fillets of larger fish (defrosted if frozen). Pilchards are particularly suitable because of their oily nature, and the whole fish offers a more complete diet. Up to half a dozen can be offered at the initial feed. A healthy penguin may eat at least half a pound of fish daily, and a starving penguin will need more.

Oiled Darter—estuarine birds suffer, too. (Photograph by courtesy of W.A. Newspapers Ltd.)

Larger seabirds need to be fed in proportion to their size. Scavengers such as Silver Gulls, *Larus novaehollandiae,* will feed on many readily available foods.

To help counteract possible dehydration first dip the fish in water. The bill should be gently but firmly prised open and the fish pushed head first well down into the back of the throat. If overfed, the bird will regurgitate excess food.

If fish are not available any easily digested protein-based invalid food such as Pro-Lac may be temporarily substituted. Again this must be placed well down the throat.

Wrap the bird firmly in a cloth or towel to prevent it struggling. Remember to handle gently and quickly for as short a time as possible.

Fresh drinking water should always be provided.

Feather damage. Feathers matted by oil should be smeared liberally with lard or vegetable oils such as maize, peanut or olive oil. Always stroke downwards to avoid breaking or damaging feathers. To absorb some of this excess fat and oil, a powder such as Fuller's Earth, cornflour or cornmeal should be puffed into the feathers with a puffer.

To avoid stress, more heavily oiled birds should be treated in easy stages over a period of several days. Where only minor oiling is apparent and the bird appears healthy and energetic the powder treatment, followed by a gentle hosing down with warm water, may be all that is required. A watering-can may be used if a water-mixing hose is not available.

Do not use detergents. These remove natural waterproofing and may necessitate a long time in captivity.

When the bird is feeding well and gaining weight, a brief shower daily with the garden hose will stimulate preening, the grooming which is necessary for plumage recovery. You must also accustom all birds to outdoor conditions again.

Poisoning. Frequent vomiting, haemorrage, lack of appetite or increasingly offensive droppings are signs of poisoning. There is little that can be done here except under expert guidance, when oral Veterinary Aureomycin or Terramycin can be administered. A "dripping" nose is quite normal with seabirds.

Release. If you are successful in restoring a Fairy Penguin to a healthy condition, it should weigh 900-1,200 grams (about 2-2½ lb.). Ensure that the feathers are fully waterproof by allowing the bird to remain in a bath of water for several hours. Avoid chilling. Should it become waterlogged, it will need to be kept for a longer time. Release too soon will result in death by drowning, cold or starvation.

Once more, contact your local fauna authority. They may wish to place a metal band on the penguin's flipper (or leg in the case of other seabirds) to enable a check to be made on the success or failure of its return to its natural evironment.

Oil pollution at Como on the Swan River. Note dead shag in foreground. (Photograph by courtesy of W.A. Newspapers Ltd.)

Do not try to tame the bird. Your aim must be to return it to its natural environment.

Do keep a record of the state of the bird when found and all steps taken before its eventual release or death. Forward the information to your fauna authority to be used as a guide for future work.

Do not destroy a hopelessly contaminated bird before contacting your fauna authority to seek instructions. They will also be able to advise you if post-mortem examinations can be arranged, and what institutions may be interested in obtaining specimens."

The information given in this pamphlet is first-rate and offers some sound principles especially in relation to feeding. However, before accepting all the recommendations as "gospel" let us look at the following article by Dr P. Croxall, Director of the Research Unit for the Rehabilitation of Oiled Seabirds, Department of Zoology, University of Newcastle upon Tyne, England . . .

"Large numbers of seabirds are killed every year as a result of contact with oil. Some die after swallowing quantities of oil but most perish from a combination of heat loss and inability to feed properly, both induced by the action of the oil in destroying the waterproofing of the plumage.

In Britain, the aftermath of the *Torrey Canyon* oiling incident in the English Channel in March, 1967, focused widespread attention on the plight of oiled seabirds, particularly auks (razorbills, guillemots and puffins).

About nine tenths of the seabirds (mainly auks) that came ashore oiled, subsequently died despite large scale attempts to clean those less severely affected.

Research Unit Established

As a result of this the Advisory Committee on Oil Pollution of the Sea established a research unit on the rehabilitation of oiled seabirds in the Department of Zoology at the University of Newcastle upon Tyne. The unit, established in January, 1970, with finance for five years from a group of sponsoring oil companies, recently completed a programme of research into the cleaning of these birds.

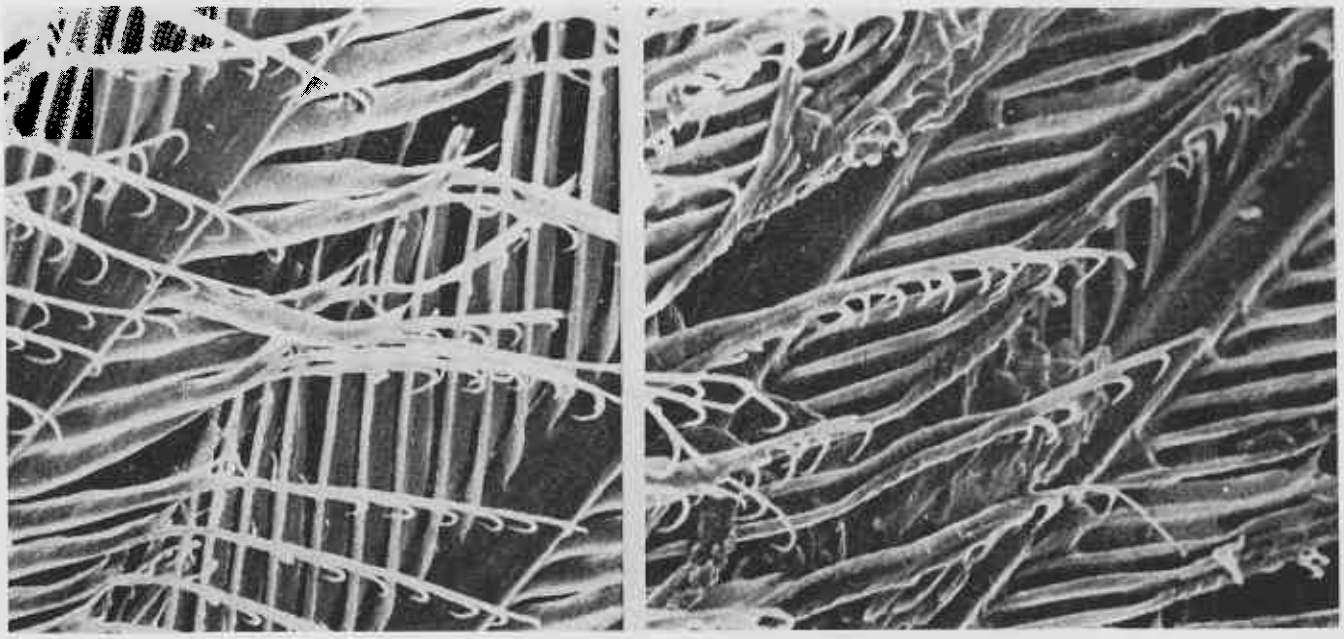
A major difficulty in attempting to rehabilitate oiled seabirds had always been the loss of water repellance of the plumage. Even after cleaning, birds took many months to regain this waterproofing. The long period of captivity not only exposed them to ailments and infections but the survivors became so tame that their chances of survival in the wild were seriously prejudiced.

It was thought that water repellency was due to either the waxy secretions of the preen gland spread over the feathers by the bird's preening, or the minute detail of the feather structure. Research by the unit showed that although preen gland secretions are important in maintaining water repellency, they are not primarily responsible for creating it.

Minute Traces of Oil

It is quite true though, that disturbance of the fine structure of bird feathers by oil drastically impairs waterproofing. [Photograph shows stereoscan microscope views of a normal guillemot feather (left) and a similar view of an oiled feather with the barbules greatly disturbed (right)].

The unit showed that once the oil has been removed from the plumage the feather structure



Left—Unoiled guillemot breast feathers. Right—Oiled guillemot breast feathers.

soon reverts. with preening, to normal, but that water repellency may still not be regained. Further work showed that the main cause of loss of water repellency is contamination of the feathers with traces—often minute—of the polluting oil or of the cleaning agent or of other materials.

Thus if oil is not completely removed or if the cleaning agent is not thoroughly washed out after use, complete waterproofing cannot be quickly attained and the bird cannot be returned to the wild.

Waterproofing Lost Again

In addition, if birds when fully waterproof after thorough cleaning are kept in unsuitable conditions, the plumage may become recontaminated with dirt or faecal material and waterproofing is lost again.

These results obviously go a long way towards explaining the previous lack of success in cleaning and rewaterproofing oiled seabirds, especially on a large scale, where insufficient attention was given to them both during and after cleaning.

Having established the causes of loss of waterproofing, a complementary part of the unit's research was to test possible cleaning agents.

To be useful a cleaning agent must satisfy two requirements: it should remove contaminating oil as completely as possible with minimum damage to the plumage, and it should not remain as a residue—even as a trace—on the feathers at the end of the treatment.

Liquid Detergents

A wide variety of cleaners was tested, including high viscosity cleaners, organic solvents and water-soluble detergents.

In brief, it was found that although some organic solvents are very successful at oil removal they tend to have disadvantageous side effects and are expensive to use. Because of the practical advantages of using domestic detergents if they proved suitable, these were studied in greater detail.

Detergents were usually most effective at removing oil when used dilute (1% solution) and in warm (40-50°C) water. Taking into account both the efficiency of oil removal and the ease with which cleaning residues could be removed from the plumage, a small number of common proprietary brand washing-up liquids were judged particularly suitable. They also had the advantage of being cheap and easily obtainable.

Recommended Procedures

The unit has combined its recommendations for successful cleaning with other general information on the care of oiled seabirds in a pamphlet. It has by now been able to try out its recommended cleaning procedures on substantial numbers of oiled auks and on various seaduck oiled after an incident near Edinburgh in Scotland. Cleaning was most successful in all cases, waterproofing being rapidly regained, and wherever adequate facilities were available for aftercare of the birds nearly all were successfully rehabilitated and released.

The breakthrough in understanding the nature of plumage waterproofing and the development of successful cleaning techniques has attracted great interest in other countries, including Australia, Canada, the United States of America and South Africa.

Oil on beach at Safety Bay.

Crucial First Steps

In all these countries oil pollution has taken its toll of seabirds—especially in the southern hemisphere, of penguins, which are the counterparts there of auks—and private organisations and government institutions have been struggling to cope with the problem of rehabilitating these birds.

The work of the research unit at Newcastle University shows that the crucial first steps in rehabilitation can now be undertaken inexpensively and with every prospect of considerable success.

Continuing its work the unit is now looking at the best diets for weakened and starving birds to ensure their survival to a stage where they can be safely cleaned, and also at the behavioural and other problems involved in reintegrating cleaned and waterproof birds into their breeding colonies."

So there we have it—two reputable bodies concerned with the treatment of oiled seabirds and both agreeing on many aspects of care, but with completely opposite views on the use of cleaning agents. The scientific unit at Newcastle recommend a diluted detergent solution while the R.A.O.U. recommend the use of lard or vegetable oils and specifically state **"Do not use detergents".**

It would appear that the main bone of contention has been the fact that it has been thought detergents remove the natural secretions which waterproof the bird. However, from the work at the Newcastle unit, it appears that the gland secretions, while **maintaining** water repellency "are not primarily responsible for creating it". It would seem to us therefore that the most important factor is that whatever cleaning agent is used it must be capable of being **completely** removed by simple methods (e.g. warm water). Detergents are

easily available, are inexpensive, are very effective and can be removed completely. Furthermore, natural preening will (if all traces of oil and detergent are removed) restore water repellency.

In the light of the recent discoveries in England it seems that many previously accepted ideas require to be rethought, although, in Western Australia at least, the principle of using household detergents has been advocated for many years by Miss Lexie Nicholls of the C.S.I.R.O. Division of Wildlife Research.

Asked to comment on the divergencies of opinion Miss Nicholls said: "It seems to me that people's attitudes to the necessary treatment of oiled seabirds are coloured by their own personal opinions or understanding of what makes plumage waterproof. In other literature, the Newcastle Unit have observed that 'oiled plumage cleaned by any method usually lost its water repellence but sometimes did not'; this is a most critical piece of information. The detergent is not the 'bad boy' in itself.

"I have never ascribed to the theory (and resultant treatment) that preen wax alone was the source of waterproofing, and have used some common household detergents for 15 years with very satisfying results.

"One must remember, and this is all important, that any foreign matter spilled on a seabird's plumage for some purpose will cause that plumage to deteriorate—as also will mechanical injury

Miss Lexie Nicholls drying a fairy penguin during treatment. (Photograph by courtesy of W.A. Newspapers Ltd.)

This Thick-billed Penguin (only the third of this species recorded in W.A.) was successfully rehabilitated.

caused by close penning or over handling, particularly with wet hands, etc. In cleaning an oiled seabird one must therefore have in mind that one is only combating one pollutant **with another pollutant** (be it detergent, vegetable oil or whatever) and that in the end **both** have to be thoroughly got rid of. This, of course, is what one is thinking of if one does not ascribe to the 'wax makes feathers waterproof' theory.

"I think that of the two pollutants with which the original one (oil) is to be attacked, detergent is by far the lesser evil—especially in the hands of amateurs. My birds are also treated with an antibiotic as a matter of course—oral Aureomycin for the first week. Otherwise this recent Newcastle work reflects my own experience.

"One statement made in the R.A.O.U. pamphlet —'Fresh drinking water should always be provided' needs to be expanded upon. Penguins neither feed nor drink of their own accord from a bowl or dish on land—I have seen a number of examples of suffering through innocence of this fact. **They must be hand fed and watered** unless a swimming tank has been provided where they may get fish in the water."

In bringing to light in this journal the divergence of opinion regarding the treatment of oiled seabirds, we do not wish to be critical of the excellent efforts of any organisation to inform the public on rehabilitation methods. Rather, it is our intention to keep our readers informed of the continuing research which is being undertaken in this field, and of the most recent advances in the methods of treatment.