

The following are some of the factors to consider when one is searching for a suitable area to release the birds (consult the local Audubon Society): The locale has to be a natural habitat; there should be other birds of the same species; there should not be an overcrowding of that species; the captive birds should not be too tame; and there should not be any predators.

Once the birds are released, their instincts will take over and they will provide for themselves.

#### SUPPLEMENTAL READING

- Altman, R. B.: Feeding injured wild and orphan birds. In Kirk, R. W. (ed.): *Current Veterinary Therapy IV*. Philadelphia, W. B. Saunders Co., 1971.
- Petrak, M. L. (ed.): *Diseases of Cage and Aviary Birds*. Philadelphia, Lea & Febiger, 1969, pp. 145-174.
- Robbins, C. S., Bruun, B., and Zim, H. S.: *Birds of North America*. New York, Western Publishing Co., 1966.
- Welty, J. C.: *The Life of Birds*. Philadelphia, W. B. Saunders Co., 1962.

## TREATMENT OF OIL-SOAKED BIRDS

JAMES M. HARRIS, D.V.M.

*Oakland, California*

The veterinarian who is interested in caring for wildlife and in the problems involving the environment and who is practicing along the coasts or on any major waterways on which petroleum is transported will have to deal with oil-soaked birds.

Oil-soaked birds presented to the clinician need treatment for the following acute existing conditions: hypothermia, shock and stress, starvation, toxic effects of the oil and acute traumas. Birds that successfully survive the acute stages of exposure to petroleum products then have to face the following chronic problems which the veterinarian must prevent and/or treat: long term stress; malnutrition; toxicity; aspergillosis; ammonia fume-associated irritation to the mucous membranes; cloacal impaction; bumblefoot-like lesions and sternal bursitis.

Since a 3-cm. diameter spot of oil on the breast of a bird can result in severe heat loss, hypothermia is almost always present in oil-soaked birds presented for evaluation and treatment.

It is imperative that warmth be provided so that these birds can survive long enough to be treated for the other concurrent problems. Piles of rags in the bottom of boxes used to transport these birds and ventilated boxes of fairly solid structure, such as cardboard, will greatly help in keeping birds warm. Heaters in clinics and/or treatment

centers are also essential to reduce the chilled state of these patients.

Concurrent with hypothermia are shock and stress due to exposure, handling and transport. Shock and stress are best combated by the use of intravenous dexamethasone. This should be given at a dose of 2 mg./lb. of body weight. The wing vein or tarsal vein is easily entered with a 22 to 25 gauge needle. In addition to dexamethasone, dextrose can also be administered intravenously. Using 50 per cent dextrose solution, a sufficient quantity can be administered in small volumes so that even relatively small birds can be dosed. Parenteral fluids should also be administered to these birds. The intravenous route can be used in administering the steroids and concentrated dextrose. In addition to this, birds should also be administered water by stomach tube. A 12 to 18 French tube can easily be passed directly into the ventriculus of birds, and 20 to 30 ml. of water given comfortably via a bulb syringe. In addition to combating dehydration, the administration of water also acts as a mild purgative, helping to eliminate any ingested oil. If large quantities of oil have been ingested, mild purgatives can be given to flush the gastrointestinal tract.

Many birds that have been oiled, having been at sea for a number of days, may be in a

state of starvation. This can be easily detected by palpating the keel of the birds. Marked reduction in the muscle mass of the pectoral muscles usually indicates starvation and dehydration. It is best not to attempt to clean birds that are in this state until they have been hydrated, given nourishment and rested for one to four days. Oil toxicity may be readily apparent, especially if oil is ingested, by respiratory distress, diarrhea mixed with petroleum, and cutaneous inflammation. The enteritis associated with oil toxicity can be controlled by giving orally either neomycin with scopolamine (Biosol M) or kaolin and pectin with neomycin.

Traumas associated with capture and wave and sea action should also be treated. Fractures, lacerations, contusions, avulsions and other traumatic injuries should be treated as in any other patient. When antibiotics are needed, those with broad spectrums seem to be most helpful. Chloramphenicol given intravenously is effective against a wide range of pathogens affecting wildfowl. When possible, culture and sensitivity studies are helpful. Injuries requiring anesthesia can be handled nicely using Ketaset or nitrous oxide—fluothane anesthesia. Ketaset has been our anesthetic of choice in almost all cases, at a dose of 0.5 to 1.0 mg./15 gm. of body weight.

Since the feet of most water birds are particularly sensitive to drying and heat, application of bland ointment such as A & D ointment, petrolatum or a lanolin-based ointment should be made on a regular basis. Accurate medical records should be kept on each patient, starting from the time the patient is under medical supervision. Admittance weight, cloacal temperature and observations, in addition to treatments and other clinical impressions, should be recorded.

Birds that do not regain their feathers' waterproof and insulating qualities must be kept a considerable length of time. During this period, many of the chronic problems listed above develop. Long-term stress may be associated with density, light, temperature, sound and salt. All of these factors must be considered to reduce stress to its lowest possible level.

Malnutrition is frequently a problem with birds kept for any length of time. An adequate diet is essential. Fresh or frozen fish or substitute foods such as dog food pellets and commercial duck foods can be used for some species.

Long-term oil toxicity is difficult to treat. The degree of toxicity depends upon the amount of oil absorbed by the birds upon first exposure to the petroleum product. The liver, kidneys, spleen, intestinal mucosa and heart can be affected by petroleum products. Depending upon the individual bird and which organ or organs are affected, the symptoms of toxicity will vary over a period of time.

Aspergillosis is a common problem encountered in wildfowl kept in captivity for long periods of time. Using bedding material that will not encourage the growth of aspergillus seems to be the most practical way of preventing it. Rags, foam rubber, serwal or crushed sugar cane and pine shavings seem to make the best bedding for birds. Straw and hay should not be used. All bedding should be changed regularly and frequently.

Although a number of drugs have been used for the treatment of aspergillosis, none has proved to be practical or effective. If the bedding is not changed regularly, the ammonia fumes produced by decomposing droppings cause serious irritation to the conjunctiva and nictitating membranes. Good sanitation is of primary importance at all times.

Most sea birds are used to defecating in water. Birds kept out of water will frequently develop impactions of the cloaca. Mineral oil inserted through the vent will help to relieve this problem, but often, just making sure the birds enter water periodically will suffice.

Lesions of the joints, very similar to bumblefoot in domestic fowl, are frequently encountered. To date, every conceivable form of treatment for these joint lesions has been tried. Success has been uniformly poor but we suspect that prevention through the use of proper bedding and access to water has been most beneficial. Sternal bursitis, similar to breast blisters in chickens, is also frequently seen. These are best treated as open, granulating wounds. Topical proteolytic enzymes, chloramphenicol, furacin dressing and powder, and hydrogen peroxide are all helpful in treating these open lesions.

In addition to the above medical care, a veterinarian may also be asked to advise and to help with the capture, preliminary treatment, transportation, cleaning, rehabilitation and release of oil-soaked birds.

There are differences of opinion as to cleaning methods, but certain things now

seem to be accepted. Birds should be transported one to a box, preferably in a cardboard box with a top large enough to hold an adequate supply of soft, warm bedding. Birds should not be cleaned until they are adequately hydrated, warm, out of shock and not in a state of starvation. The cleaning method employed should be such that oil is completely eliminated from the feathers, but one that does not produce a long-term reduction in waterproofing and insulating effects of the feathers. The two cleaning methods most frequently used at present are solvents and liquid dishwashing detergents. The English recommend using a 1 per cent solution of liquid dishwashing detergent at 104° to 112° F. Naviaux's method employs the use of Shell Sol 70. Both methods have advantages and disadvantages. The solvent method is perhaps a little faster, but is infinitely more toxic, is more expensive per bird, and has a greater fire hazard. Use of liquid detergents takes longer, is less expensive per bird, and is safer for both bird and operator.

When using Shell Sol 70, the solvent should be heated to 104° F. and be applied by a fine stream from a plastic squeeze bottle or pump and nozzle; the bird should be held over a pan to catch the solvent. Birds should not be cleaned until their body temperature is above 101° F. Just before cleaning, the bird should receive a dose of dexamethasone 2 mg./lb. I.V. and 30 to 60 ml. of H<sub>2</sub>O per os. When all the contaminant is removed, the bird should be dried by patting with soft cloths and held in front of an air dryer. Since birds cleaned

with solvent will be intoxicated from the solvent fumes, they should be placed in padded pens for two to six hours after cleaning until signs of intoxication have cleared.

To encourage preening, birds should then be given access to ponds of water.

Many questions still remain. Is there a cleaning method that will allow immediate release? What are the specific species dietary requirements? What specific drugs and antibacterials are most effective, and at what levels should they be administered? Are released birds able to survive and breed?

Great progress has been made in the care and treatment of oil-soaked birds as of this writing. Whereas two to three years ago, a 2 per cent survival rate was good, present methods now are producing a 50 per cent return to the wild. Since birds are excellent biologic monitors of the oceans and shore areas, these efforts are worthwhile.

Recently, a number of excellent publications have been printed on this subject and are recommended for supplementary reading.

#### SUPPLEMENTARY READING

- Clark and Kennedy: Rehabilitation of Oiled Sea Birds. Newcastle upon Tyne, England, University of Newcastle upon Tyne, 1968.
- Naviaux, J. L.: After Care of Oil Covered Birds. Pleasant Hill, Calif., National Wildlife Health Foundation, 1972.
- Recommended Treatment of Oiled Sea Birds. Department of Zoology, University of Newcastle Upon Tyne, Newcastle upon Tyne, England, 1972.
- Stanton, P. B.: Operation Rescue. Washington, D.C., The American Petroleum Institute, 1972.