

WATER BIRDS AND THE SAN FRANCISCO BAY OIL SPILL

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Abstract. Approximately 800,000 gallons of Type C Bunker oil were liberated after two oil tankers collided near the Golden Gate Bridge on January 18, 1971. Tidal action dispersed most of the oil along the coastline from Double Point in the north to Pigeon Point in the south. Approximately 7,000 birds were oil affected of which 4,600 were picked up and treated. Survival was low. Western Grebes accounted for 53% of the treated birds. Scoters made up 24% and the remaining 23% was made up of 24 other bird species. Oil affected the birds in several ways. Shock, loss of flight, water repellency and insulation were obvious problems and required individual treatment.

Approximately 40,000 individual volunteers worked on bird rescue and maintenance. Several cleaning compounds were used. Basic H was used at the San Francisco Zoo while many other cleaning stations used mineral oil. Polycomplex A-11 was not used. After cleaning, maintenance provided several problems. Information on long term maintenance for repair or replacement of damaged feathers and food and water requirements was lacking. Several methods of feeding were attempted.

Standard Oil Company computed the cost for bird care at \$225,559.00. The cost for each bird liberated back into the wild was \$1,000.00. A total of 218 birds were banded and liberated. As of December 1, 1971, fourteen bands have been returned. The estimated survival figure from the 4,686 treated birds was less than five percent.

INTRODUCTION

Daily bird tragedies concern us, but when thousands die before our very eyes it is appalling. Such was the feeling when about 7,000 water birds became contaminated with "Bunker C" oil in the Golden Gate area on January 18, 1971, as the result of a pre-dawn collision between two Standard Oil tankers.

The collision occurred very near the Golden Gate Bridge, and tidal action quickly dispersed the oil mostly to the ocean outside the Gate. Significant oil pollution extended as far north as Double Point, approximately 20 miles from San Francisco and south about 40 miles to Pigeon Point. In the Bay proper, contaminated areas were confined to a relatively small area westward of Angel and Alcatraz Islands.

EFFECTS ON WATER BIRDS

An estimated 7,000 water birds, of which more than 4,600 were picked up and processed at one or more treatment stations, were affected by the oil.

Early estimates, based on the Santa Barbara oil spill experience, projected that less than 10 percent of the 4,600 birds would survive.

The Department's annual winter aerial inventory had just been completed a few days before the spill, and 115,975 waterfowl had been counted in the San Pablo-San Francisco Bay area. Birds were abundant, and oil contamination was inevitable.

Records show that 4,686 birds were processed at various collection and treatment stations. Of these most were heavily oiled and required extensive cleaning treatment. Fifty-three percent were western grebe (Aechmophorus occidentalis) and 24 percent were surf (Melanitta perspicillata), common (Oidemia nigra) and white-winged (Melanitta deglandi) scoters. The remaining 23 percent was made up of 24 species. This percentage breakdown is not to imply that bird populations occur in these proportions. The major contamination area was seaward, and therefore, fewer scoters and waterfowl were affected. If the oil movement had been toward San Pablo Bay and the South Bay, larger numbers of other species would have been involved. For instance, in our January 1972 inventory there were more scoters than grebes inside the Golden Gate but seaward the western grebe outnumbered scoters twenty to one.

It is fascinating to read James Moffitt's account of a similar disaster occurring on March 6, 1937 (Moffitt, J. and R. T. Orr. 1938. Recent disastrous effects of oil pollution). Moffitt reports on the 2,730,000 gallon oil spill which polluted about the same area as that involved in the San Francisco spill, and affected bird species occurring along the open coast and those forms inhabiting shallow bays. Murres, grebes and scoters were hard hit, but offshore-ranging forms such as murrelets, auklets, shearwaters and petrels were apparently spared because the oil did not extend sufficiently far from shore to embrace their habitats.

Also, in both kinds of habitat in 1938 as well as in 1971, several kinds of gulls were commonly observed. Very few were found incapacitated by oil. It was concluded that these birds escaped largely by reason of their feeding and resting habits.

EFFECTS OF OIL ON BIRDS

Birds contaminated by oil are affected in many ways. Various degrees of shock is immediate. Loss of flight, water repellency and insulation are obvious problems which require individual treatment.

Plumage has two important qualities--water repellency and heat insulation--which when lost cause a chain reaction detrimental to the birds' welfare. For instance, murres, western grebes and scoters are exclusively aquatic, and as such are unable to cope with the terrestrial environment except for short periods of time. I review this fact with you because it dramatizes the tremendous task of after-care and long-term maintenance.

Last year in California there were about 1,000 oil spills of various sizes. More than three-quarters of them were caused by human error. This dictates the need for planned operating procedures and improved bird cleaning and maintenance techniques.

PUBLIC INVOLVEMENT

Following the San Francisco spill there was a veritable explosion of public concern on environmental abuse and governmental control. It has been estimated that as many as 40,000 individual volunteers worked on bird rescue and maintenance.

Publicity, both verbal and written, was plentiful and often inaccurate. Inaccurate because there were many self-appointed leaders and authorities whose emotions often led them to act according to their hearts rather than their minds. This led them to waste sympathies and energies in wrong directions.

The largest organized volunteer facility was the Richmond Bird Care Center which opened at 8:00 a.m. on January 19 and functioned in some capacity until September 8 when the last treated bird was released.

The only experienced person among the estimated 150 to 250 volunteers who worked at Richmond that first day was one man who (said he) had cleaned one duck somewhere in the dim distant past.

To make matters more difficult the first bird arrived at the Richmond Center about 4:00 p.m. on January 19 and during the period between 5:00 and 6:00 p.m., 250-300 live birds arrived. By the next evening another 300 had arrived.

A report from the Richmond Bird Center about the volunteer workers contains this paragraph: "There were many people crying, men and women both, as they ever so slowly and ever so gently lifted clean mineral oil from the tub and allowed it to softly drain over each feather, guiding it where possible to be most effective in sloughing off the dark, dirty crude oil. Over and over and over again."

COLLECTING CONTAMINATED BIRDS

Collection of contaminated birds was spontaneous. Every curious and faithful volunteer finding stressed birds retrieved and transported them to one of many collection and treatment stations, some of which were established by formal conservation or governmental departments.

Birds were handled, mangled and treated with tender loving care. Some handlers were successful, others were not. Birds were boxed, wrapped in rags or cradled against a woman's bosom for transport to cleaning stations.

CLEANING OILED BIRDS

The 1969 Santa Barbara oil spill incident provided considerable experience. We knew that cleaning agents had been tested, their availability and the results. Actually, following the 1969 experience some additional trial tests were made of cleaning compounds at the Department of Fish and Game Field Station. We were prepared to implement the use of two cleaners, Polycomplex A-11, a micro-dispersant and solubilizer for heavy crude or fuel oils in sea water, and Basic H, a fully biodegradable organic substance, non-toxic non-irritating without acids, alkalis, Kerosene, solvents, which does a reasonable job of cleaning.

With this experience and written reports from other professional workers on which to lean we proceeded accordingly. We were immediately challenged, however, in the press, television, radio and at public hearings and meetings. It was incredible, they said, that a public agency would recommend a compound which when used in Santa Barbara, the bird losses amounted to 90 percent.

Public response against using these cleaners was startling and for this reason and because we were unable to obtain immediate delivery, Polycomplex A-11 was not used. We did, on the other hand, use Basic H at the San Francisco Zoo cleaning station. The public relations result was just as startling, and the Zoo personnel were publicly downgraded and criticized. Incidentally, the Zoo operation was assisted by Phil B. Stanton, Biologist at Farmington State College in Massachusetts. Stanton has had considerable experience in the field and laboratory and was currently doing research under a grant by the American Petroleum Institute.

The emotional wave of excitement was underway, and no amount of available professional expertise was going to stop the reaction. Our original plan was to remove birds, as soon as possible, from public view and to destroy those birds which, in our opinion, had no chance of survival. This was not to be. Public involvement, individual possession and attachment and long-term care were here to stay. The next order of business was to de-activate the many small stations and centralize bird care and maintenance. This was done with a reasonable amount of success.

As a substitute cleaner the use of light mineral oils was recommended by a local veterinarian who maintained that this oil would not remove all the important natural feather oils.

Oil baths were given each bird in a series of three tubs. The bird was moved to the second and third tub as it became cleaner. It usually took a half hour washing using about five gallons of mineral oil per bird. When mineral oil was in short supply, anything would do. Many stores exhausted the supply of olive and castor oils.

Long-term care challenges your capacity to innovate a dry environment in which an aquatic bird can be sustained until able to repel water.

Bunker oil stresses the bird and makes feathers non-functional; cleaning destroys feather structure; disarrangement of feather network allows for increased heat loss, and heat loss increases the need for food intake of birds that don't feel like eating in the first place. Also, we don't know very much about aquatic food and water requirements.

Dr. Steve Herman, University of California, found the western grebe to be a voracious feeder, consuming an average of 200 grams of live fish each day. At the Clear Lake, Lake County, study area the grebes selected centrarchids, and at Topaz Lake where centrarchids are not available they took cyprinids and crayfish. We don't know what they eat out of the ocean. Grebes, like other predators, are opportunistic feeders and probably go long periods of time without food. The question is, of course, how well can they forage for themselves after having been in captivity, and what kinds of feeds are available if held until the spring and summer months. The same applies to scoters and other migratory water birds.

By February, the live bird count had been reduced to less than 1,000. By March 4, the count would only be 375.

Bird losses were caused by many problems. After the initial stress loss the biggest problem was probably aspergillosis. Aspergillosis is a very common disease of the air sacs but causes other problems too. It is a fungus found commonly throughout the country.

The Richmond Center organized and implemented a sophisticated bird care maintenance operation.

Among the hundreds of volunteers were veterinarians from the University of California, students of biology and related studies and personnel from local Ecology Action Centers.

Live birds were medicated, baby-sat, hand fed and re-medicated. An intensive care unit was built in the beginning and functioned as such for more than six months. In the Intensive Care Unit each person observed and treated only two or three birds, in most instances, during the early hours and even weeks later.

In final analysis not many birds, if any, may be reestablished in the wild. We learned many things from the Care Center which should help us in future oil spill incidences.

They did demonstrate the hazard of over-crowding western grebes.

They did demonstrate the excessive costs of long-term maintenance.

They did demonstrate that mineral oil was used with poor results.

They did demonstrate that even with tender loving care large numbers of birds will die.

They did demonstrate that most birds die during the rehabilitation period.

They did demonstrate there was a lack of knowledge in proper husbandry procedures, disease and pathological physiology of affected birds.

They did demonstrate that State authorities did not have the readiness to meet the problem.

MAINTENANCE COSTS

There is no way of determining total costs of handling contaminated birds from the San Francisco oil spill. Thousands of volunteers of all ages contributed time, materials and supplies of which there is no record.

It has been determined from records maintained by the Richmond facility that maintenance costs are excessive. These records, along with those submitted by other volunteer groups and the Standard Oil Company, compute the value of bird care at \$225,559.00. On a per bird ratio it cost at the Richmond Center about \$1,000.00 for each bird released back into the wild or about \$80.00 for each live bird originally brought into the care maintenance facility. However you evaluate, it costs, and costs, and costs, and costs.

RESEARCH AND INVESTIGATIONS

Considerable written material has been published on oil pollution. Most of the reports are directed toward legislation, pollution and clean-up. Proceedings of the June 1971 conference on Oil Spills sponsored by the American Petroleum Institute, Environmental Protection Agency and U. S. Coast Guard contained 65 papers, and only one was related to bird cleaning. Incidentally, the paper on Cleaning and Rehabilitation of Oiled Sea-birds was less than four pages long.

During the San Francisco incident several institutions and individual scientists obtained dead birds for research purposes. Not one has produced any significant results. There is a need for more and better information on cleansing agents, cleaning procedures and bird care. If any of you have some good ideas, you should be encouraged to seek funding possibilities and get to work.

RESULTS

Absolute results may never be known, but this we do know. A total of 218 birds were banded and released with Department of Interior bands. The Richmond Center report shows 1,285 birds were treated, of which 196 survived for a 15 percent survival. Band returns as of December 1, 1971, indicate a substantial mortality of released birds. As of that date, 14 bands have been returned. This is double the mortality of migratory game bird band recoveries made by hunters. I have no band return records of doves and waterfowl which died of natural causes. The losses, obviously, are excessive.

A more pessimistic report computed from the total of 4,686 birds retrieved leaves a survival result of less than five percent.

RECOMMENDATIONS

It is recommended that spilling of oil and other contaminants in California water be prohibited, accidental or otherwise.