

Kevin

**WILDLIFE REHABILITATION ACTIVITIES ASSOCIATED
WITH THE TESORO SINGLE POINT MOORING HOSE
SPILL**

A report to the:

**Hawaii Department of Land and Natural Resources
Division of Forestry and Wildlife**

and

**Hawaii Department of Health
Office of Hazard Evaluation and Emergency Response**

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Endangered Species Veterinarian**

**December 15, 1998
Maui Veterinary Services Office
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Makawao, Hawaii 96768**

INTRODUCTION

During the months of September and October, 1998, oiled seabirds impacted by the Tesoro single point mooring (SPM) hose spill were collected, cleaned, rehabilitated and released. Birds were collected on the islands of Kauai and Oahu. Cleaning and rehabilitation efforts were conducted at facilities on Maui, Kauai, and Oahu. Birds were also released from sites on these same three islands. The first oiled bird was found at Sea Life Park on Oahu, 28 August. The last group of birds was released at the Kilauea Point National Wildlife Refuge on 21 October. The following text reports some of the more salient points of the response including important lessons learned as well as ways to improve future response efforts. Due to the protracted nature of the wildlife rehabilitation effort, it will be impossible to discuss the day to day activities, but some of the more significant events will be reported. It is also important to note that the conclusions reported here resulted from my experiences during the SPM hose spill and reflect my personal opinion.

THE RESPONSE

Timeline



1. Initial spill (8/24)
2. First live oiled bird collected (Sea Life Park: 8/28)
3. Second live oiled bird collected - euthanized by Nathan Caldwell (Kilauea Refuge: 9/5)
4. Third live oiled bird collected (Kilauea Refuge. 9/6)
5. Fourth live oiled bird collected (Kilauea Refuge), fifth and sixth live oiled birds collected (Sea Life Park).
Initiation of official oiled wildlife response. (9/7)
6. First release of rehabilitated birds (Maui and Oahu) and collection of twenty-sixth live oiled bird (Kauai: 9/29)
7. Initiation of rehabilitation activities on Kauai (10/2)
8. First release on Kauai (10/15)
9. Second release on Kauai (10/18)
10. Final release on Kauai (10/21)

Initial Notification

On 31 August Rich Rosen (Tesoro Hawaii Corporation) called to inform me that a single oiled Red-footed Booby had been captured at Sea Life Park (SLP). He went on to explain that on 24 August Tesoro spilled approximately 400 gallons of crude oil at their Barber's Point single point mooring facility. Feather samples from the bird were to be analyzed to determine whether it had been impacted by the SPM spill. I then called Francis Oishi (DLNR/DAR) to ask if he was aware of the SPM spill. At that time he had no knowledge of the spill. I also attempted to contact Kiana Pugh (the SLP employee charged with caring for the oiled bird), but she was unavailable. I left a message requesting that she return my call.

During the next three days I spoke with both Ms. Pugh and Dr. Robert Braun (veterinarian for SLP) to discuss the care and disposition of the bird. Then on 5 September I was contacted once again by Rich Rosen. He reported that an oiled Red-footed Booby was found at the Kilauea Point National Wildlife Refuge (KPNWR). This bird was euthanized by a refuge employee (Nathan Caldwell). On 6 September I was again contacted by Rich Rosen who reported that another oiled Red-footed Booby had been collected at the

KPNWR on Kauai. I called Nathan Caldwell to learn more about the situation. The bird had been discovered at approximately 1300 on 5 September, but was not reported to him until 1700. He held the bird overnight in a cardboard box, but did not provide any supportive care. I called Rich Rosen and attempted to arrange for Tesoro to pay to fly airline kennels (from the oiled wildlife supplies on Oahu) to Kauai so that the bird could then be transported to me on Maui. Rich tried to work through the Clean Islands Council staff on Oahu, but they were unable to make arrangements in time to get the kennel to Kauai before the air cargo service discontinued daily operations. After receiving assurance from Liz Galvez (DOH/IEER) that the cost for my flight would be reimbursed, I then attempted to fly to Kauai that evening. However, I was unable to make the last flight of the day which connected through Oahu.

The morning of 7 September, I flew to Kauai where I treated two Red-footed Boobies and one Brown Booby that was brought to the refuge that morning by members of the public. All three were heavily oiled and in critical medical condition. One of the Red-footed Boobies expired shortly after being examined and treated. I asked Nathan Caldwell if the refuge facilities could be used to stabilize and treat the birds. He felt that would not be possible due to the potential for impact on the public visitors. I also spoke to Tom Telfer (DLNR/DOFAW) to learn whether he knew of any location on the island where a stabilization and potentially a rehabilitation facility might be located. He suggested the local humane society or the DOFAW baseyard. I spoke with the director of the local humane society and learned that the available area at their shelter was limited. This area was also unusable because the barking dogs would create stress for any captive birds. Similarly, the available area at the DOFAW baseyard and facilities were limited. Further searches for a location were hampered by the fact that 7 September was a national holiday and few businesses were open.

Late in the morning Nathan Caldwell received a message from a representative of the US Coast Guard who reported that the national pollution response fund had been activated in order to pay for response activities. The federal pollution response number we were given was 148027. At that point, I contacted Ms. Linda Elliott (IBRRC) and requested that she provide assistance with the wildlife rehabilitation effort. Because I was unable to locate a suitable site on Kauai at which to conduct wildlife rehabilitation activities, I flew with the two surviving birds to Maui. At the Maui Veterinary Services Office (MVSO), I continued their treatment. Ms. Elliott arrived at the MVSO on 8 September and we began to organize the oiled wildlife response effort.

I have discussed the initial portion of the response in some detail in order to provide a greater insight into the problems encountered during the beginning stages of the rehabilitation process. These aspects will be further emphasized later in the report.

Rehabilitation Facilities

The first five birds recovered on Oahu received an initial washing at Sea Life Park by park personnel. On 13 September I flew to Oahu to examine and evaluate these birds. All were still oiled to varying degrees and each was medically compromised. One bird (red 239 left) had two broken wings and was no longer a candidate for release back to the wild. Because of Sea Life Park's limited facilities and personnel, the four potentially releasable birds were flown to the MVSO on 19 September where they were placed in a quarantine facility. There they were treated and eventually washed before being flown back to Oahu for release.

The MVSO served as the main rehabilitation site during the initial phase of the response. Oiled birds were housed in large airline kennels while being treated. Heat lamps, heating pads, window fans, and HEPA filters were used to compensate for the lack of adequate heating and ventilation capabilities. Washing and rinsing took place outside on the carport using a portable water treatment unit provided by the Clean Islands Council. After being washed, birds were placed back inside where they were held in wooden net-

bottom drying pens. Initially, clean dry birds were placed in outside pens at the MVSO. However, the ambient temperature proved to be too cool for this stage of the rehabilitation process. The outside pens were then relocated to sea level at the Kealia Pond National Wildlife Refuge. To prevent any cross-contamination between the rehabilitated birds and the native waterfowl at the pond, the pens were located far back in the nearby forest and foot traffic was prohibited between the rehabilitation site and the refuge office.

During the second phase of rehabilitation, facilities were improvised on the island of Kauai in order to be closer to the source of affected birds and consolidate the available rehabilitation personnel. For example, individuals could participate in search and collection (SAC) activities, stabilization, washing, and rehabilitation. If we had continued to use the facilities on Maui, resources would have been divided and manpower requirements would have been doubled.

Initially birds were held in a small poorly ventilated closet at the visitor center of the KPNWR while a more appropriate site was located. After five days, they were moved to an abandoned boathouse at the Kauai Lagoons Hotel. The rehabilitation process was delayed further while an outside pen was constructed to house the birds post-wash. Another issue arose when the small portable rehabilitation pool began to leak. After several days, a more suitable replacement was purchased by Tesoro Hawaii.

Rehabilitation Numbers

A total of 34 birds were collected for rehabilitation. Of these, 19 were released and one remains in captivity at Sea Life Park. The following is a break-down of the birds which were admitted to the facilities on Maui and Kauai.

Species	# Admitted	# Released	# Died	# Euthanized
Bulwer's petrel	1	0	1	0
Brown booby	12	3	9	0
Red-footed booby	20	16	3	1
TOTALS	33	19	13	1

DATA ANALYSIS

Descriptive Statistics

Figure 1

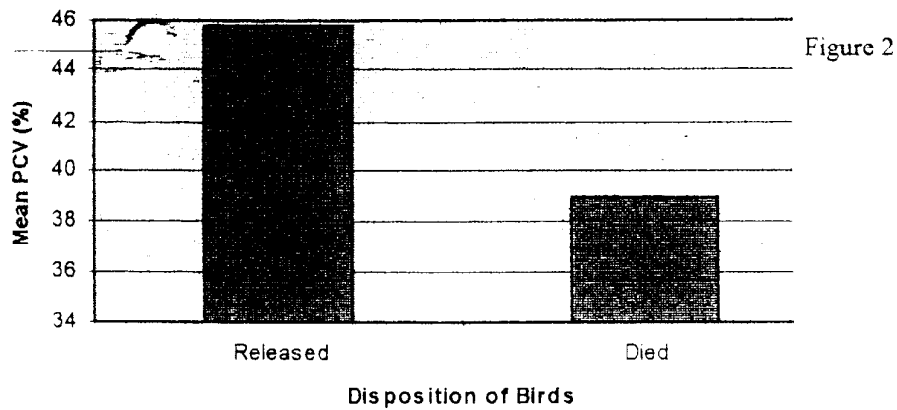
Comparison of Mean Values for Data Collected at Time of Admission to Rehabilitation Facility		
	Released	Died
Packed Cell Volume*	46%, (n = 19)	39%, (n = 12)
Estimated plasma total solids	3.6 g/dl, (n = 19)	3.3 g/dl, (n = 11)
Blood Glucose	219, (n = 19)	205, (n = 7)
Percent of body oiled*	18%, (n = 19)	45%, (n = 13)

* Values found to be significantly different.

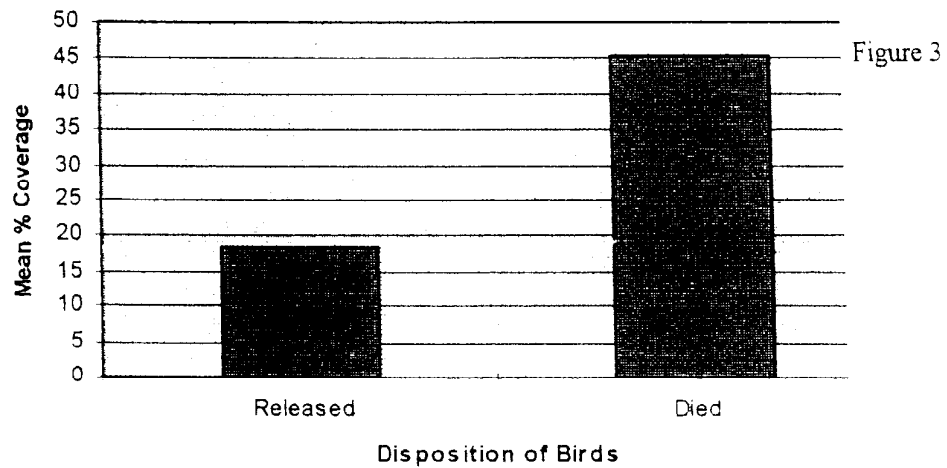
Independent samples t-test of mean packed cell volumes: $t = -2.742$, $df = 28$, $p = 0.011$ (see figure 2);

percent oiling: $t = 3.525$, $df = 30$, $p = 0.001$ (see figure 3).

**Packed Cell Volume (PCV)
Recorded During Admission to Rehabilitation
Facility**



Percent of Body Area Oiled



% Oiling vs. Rehabilitation Time

To determine whether the amount of oiling influenced the length of time a bird spent in captivity, a Pearson correlation coefficient was generated. Data for the four birds brought to the MVSO from SLP were not included due to the extenuating circumstances surrounding their rehabilitation. Analysis revealed a significant positive correlation between these two parameters ($r = 0.523$, $p = 0.046$, $n = 16$). (See figure 4).

% Body Area Oiled vs. Length of Rehabilitation Period

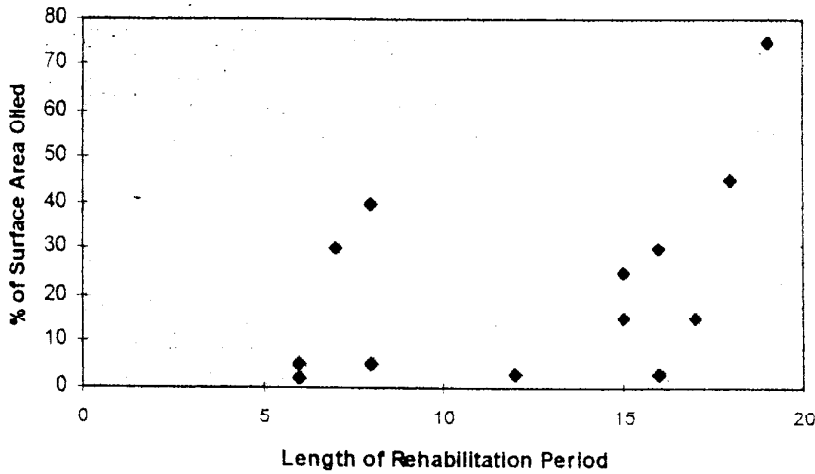


Figure 4: Length of rehabilitation period based upon number of days from initial collection to release.

% of Body Surface Area Oiled vs. Date of Capture

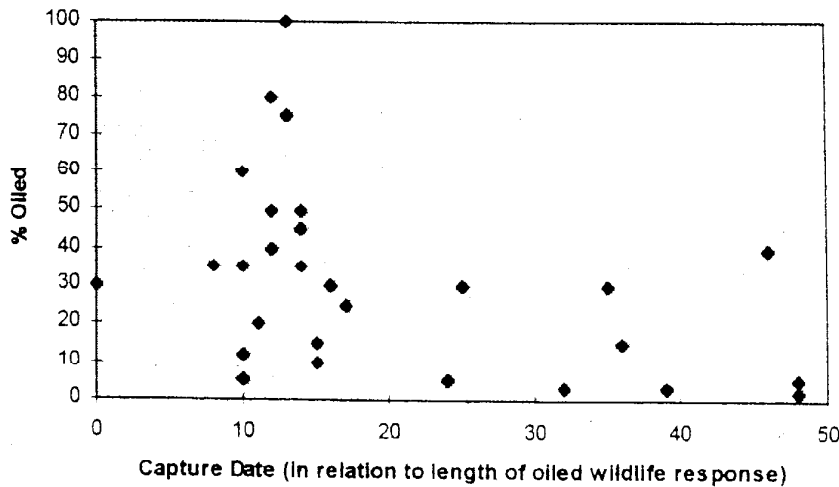


Figure 5: Day 0 = the first day an oiled bird was collected (8/28/98 by employees of SLP).

DISCUSSION

Although statistical analysis of the data collected during this incident suggests that birds which were more heavily oiled were less likely to survive, it is important to remember that most of these birds were collected at the beginning of the response when there was little to no search and collection effort. At this time, the birds which were collected were those being reported by members of the public. These individuals were in much poorer physical condition than those who were located during active search and collection activities. Consequently, they were less likely to survive the rehabilitation process. This is also reflected by the significantly lower mean packed cell volume observed in the group of birds which died. Petroleum products are known to cause anemia in birds that ingest these products while preening contaminated feathers. In light of these results, it is plausible to assume that the birds which died had been exposed to the oil for a longer period of time. This again emphasizes the need for prompt assessment of an incident followed by aggressive search and collection efforts.

Figure 4 above illustrates that of the birds which were released, those which were more heavily oiled spent a longer period of time in captivity. While this graph makes intuitive sense, these data are confounded by three factors. The first is the poor condition of those birds presented early in the response. This was addressed in the preceding paragraph. The second is the lag time experienced at the beginning of the response when facilities were not ready to receive or rehabilitate birds. This also occurred in the second phase of the response when operations were moved to Kauai. Here washing of birds was delayed while a rehabilitation site was being located and an outside pen built. The third factor occurred on Maui during the first phase of the response when birds had to be re-washed to facilitate waterproofing because of inadequate outdoor holding pens and swimming pools. The latter two points emphasize the need for a readily available facility which can be quickly activated for use and contains the appropriate equipment required for the proper rehabilitation of oiled wildlife.

The search and collection (SAC) effort in this spill did not begin in earnest until four days after the first bird was taken to the MVSO. At this time the dedicated SAC team consisted of two individuals (Wendy San Giacomo - IBRRC and Stanley Souza - CIC). Because of the small number of people devoted to this effort, SAC activities were often limited to simply collecting birds reported by the public with little time remaining to actively search. As mentioned above, these birds are often the poorest candidates for rehabilitation. In my opinion, SAC activities were hampered by two factors. First, the responsible party was slow to respond to requests for increased search and collection efforts (see appendix 1). Secondly, the trustees did not require them to adopt a more aggressive approach. During future spills, the trustees must require that a prompt and thorough search and collection effort be carried out in order to improve the quality of the oiled wildlife response. Search and collection team members should also be trained in basic observation skills as well as have knowledge of the appearance and effect of petroleum on wildlife. During the SPM hose spill, team members often had no experience observing or handling birds. It is also important that SAC team members be able to capture and stabilize the oiled wildlife they observe. This need was highlighted during the SPM hose spill response when the members of one team found themselves in possession of an oiled bird with no idea of how to provide appropriate care.

CONCLUSIONS

1. Hawaii needs a permanent oiled wildlife response facility capable of responding to recurring small numbers of oiled birds as well as large numbers of individuals impacted during a significant event.
2. Because of the feeding patterns of Hawaii's seabirds, a permanent facility could realistically be located on either Kauai, Oahu, Maui, or Hawaii. Even a small release such as the SPM hose spill resulted in birds impacted on multiple islands necessitating transport of these individuals to a response facility. Therefore, the facility could be located on the island where land or cooperating agencies are most available.
3. Experience gained during this incident emphasized that Sea Life Park should not be used as a long-term rehabilitation facility for oiled seabirds due to inadequate training, personnel, and equipment.
4. Funding sources for oiled wildlife response must be more clearly defined and a mechanism for access to these funds developed.
5. Search and collection is a critical component of any response and should be performed as soon as possible utilizing teams of **experienced, well-trained** individuals. Delaying search and collection efforts not only decreases the survival rate of rehabilitated birds, but also impairs the trustees' ability to adequately assess the level of injury to natural resources.
6. The state and federal trustees must take control of the wildlife response by monitoring the standard of care which is provided. This would be more easily accomplished if the oiled wildlife rehabilitation contractor was employed by the trustees and not the responsible party.
7. During the SPM Hose Spill the oiled wildlife response was poorly integrated into the unified/incident command system. Requests for materials, equipment, and personnel that were submitted to the logistics section were inconsistently addressed (MEMO) and often questioned or debated by the responsible party. This inefficient process often affected the response effort.
8. Communication between the various branches of the federal and state natural resource trustees must be improved. During this response, search and collection efforts were temporarily suspended by Adam Asquith (Kilauea National Wildlife Refuge) when he blocked access to the refuge because he judged that there was poor compliance with a post-release study protocol. These types of issues should be addressed outside the realm of the search and collection or rehabilitation effort so that they do not impact the quality of the response.
9. Access to important seabird colonies (e.g., Ka'ula rock) must be improved before future incidents occur. In the example of Ka'ula rock, an assessment team was not permitted to visit this colony until several weeks after the wildlife response was concluded.

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September 15, 1998

MEMORANDUM

TO: ~~Rich Rosen~~, Environmental Group Leader
FROM: Greg Massey
SUBJECT: Oiled Wildlife Search and Collection Activities

To date, the MVSO has been actively providing rehabilitation services for seabirds impacted by the TESORO SPM Hose Spill for seven days. Our current mortality rate is 61%. In large part, this is due to the extremely poor physical condition in which the birds are found. Oiled birds are being discovered after they are in such a weakened state that they can no longer feed themselves or flee from fishermen or members of the public. It is very likely that these birds represent only a small portion of the affected population. Therefore, the goals of our search and collection efforts should be as follows:

1. Survey the existing population to determine the extent of impact. This involves shoreline survey as well as investigating areas where birds are known to congregate (ie., offshore islets). - This will aid in planning facility, equipment, and personnel needs.
2. Conduct systematic search and collection efforts using multiple two-person teams.
3. Stabilize birds for shipment (refer to current S.O.P.).
4. Transport birds to the MVSO.

To accomplish these goals we need to:

1. Ship the remaining four stabilization kits currently stored at the HOSRC to Wendy San Giacomo on Kauai.
2. Form a minimum of three two-person search and collection (SAC) teams (five teams are needed).
3. Provide transportation and communication equipment (2-way radio or cell phone) for the SAC teams as well as the SAC coordinator (Wendy San Giacomo).
4. Provide the SAC coordinator with a minimum of one medium sized plastic airline kennel per team.
5. Provide the SAC coordinator with a minimum of one long-handled capture net per team (available for purchase on Kauai).
6. Provide each SAC staff person with appropriate PPE (see SAC coordinator for specific items).
7. Provide essential supplies for each staff person (e.g. sunscreen, water, food, etc. - see SAC coordinator).
8. Provide essential stabilization supplies and equipment as need by SAC coordinator (e.g., heating pads, pedialyte, syringes, feeding tubes).
9. Provide each SAC team with require a minimum of one pair (10 x 50) binoculars.

Two seabird sanctuaries at high risk of impact (Lehua Rock - hundreds of birds, and Ka'ula Rock - thousands of birds) are located approximately 40 miles from Kauai. It is imperative that these areas be surveyed on foot to search for evidence of oiled birds which have returned to the colony (the other area of concern, Kilauea Refuge, is being surveyed each evening by refuge personnel). According to Tom Telfer (HI DLNR/DOFAW), two people would be required to survey Lehua Rock and four people for Ka'ula. Also, there are access issues that Tom can further clarify. This is a subject which must be addressed to insure that we are not ignoring important natural resources at risk of impact. To do this would require:

1. Transportation
2. Standard SAC team equipment and supplies
3. Access

Finally, there are many areas on Kauai that are not accessible because they are blocked by private property. A survey option in these areas may be to use RIB's or Zodiac types of boats to gain access to the shoreline. Again, it is important to search areas not frequented by the public in order to collect all potentially affected birds and to better assess the level of impact. Hopefully by presenting these issues in writing, I have clarified any misunderstandings generated by earlier verbal requests for assistance.

cc: Curtis Martin, Carol Terry, Beth Flint

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 FACSIMILE TRANSMISSION

To: Rich Rosen, Environmental Working Group Leader
Phone: 808-
Fax: 808-847-7183

From: Greg Massey, DVM, Dipl. ABVP (Avian Practice)
 Endangered Species Veterinarian
Phone/Fax: 808-572-3502

Date: September 18, 1998 **Time:** 0735 **No. of pages:** 1

Subject: Status of birds at MVSO

Remarks:

1. No new birds on 9/17
 2. No deaths on 9/17
 3. Live birds currently at the MVSO
- | <u>Log #</u> | <u>Species</u> | <u>Location Captured</u> |
|--------------|----------------|--|
| 008 | RFB | PMRF beach area |
| 009 | BB | PMRF Barking Sands |
| 011 | BB | Barking Sands |
| 015 | BB | Kilauea Light House |
| 016 | BB | Majors Bay |
| 018 | BB | ?, (not received records from Wendy San Giacomo yet) |
4. Birds in the freezer at the MVSO: #'s 017
 5. Yesterday volunteers (Marie Rodgers, Peter Dunlevy, Deb Hall, Lori Gaskins) worked at the MVSO from 0700 - 1745.
 6. We washed #009 & 018 yesterday. All three washed birds are doing well this morning and no longer require supplemental heat. Today we plan to wash 015 & 008.
 7. Yesterday we discovered (while drying #'s 009 & 018) that the birds are aggressive towards one another in confined spaces. Therefore, we will need to build multiple small pens for their initial acclimation to the ambient environment.
 8. I spoke to Paka Nishimura (SLP curator) yesterday. He would like to have the birds there re-evaluated again before they are shipped. If arrangements can be made, I could fly to Oahu today and bring airline kennels. I could reevaluate the birds then kennel them for transport to the airport. This would require an assistant to drive both me and the birds to the airport.
 9. The container arrived yesterday at 1800. We will have volunteers move equipment into the container and clean/disinfect the Army Surplus Trailer (AST) today. The fan and screen door will be installed on the AST today and then it will be fully functional.
 10. We are hearing bits and pieces of information from various sources (aside from the daily reports from the SAC team coordinator on Kauai) which mention sightings of oiled birds at various locations. I would appreciate receiving updates from the incident command on any sightings. This will greatly improve our ability to respond. The details surrounding the collection of both live and dead birds are equally important. I would also like to be

informed of any plans by the ICS to search and collect birds on islands or islets other than Kauai. The SAC team coordinator keeps me informed of activities on Kauai, but I am having difficulty learning details of activities taking place on Oahu or offshore islets. Additionally there needs to be better communication with the SAC team coordinator on Kauai. The MVSO staff was informed by Kevin Foster (FWS) that there would be daily surveys of the Kilauea refuge, but we learned from the SAC coordinator that as of this morning, this has not happened yet. 11. Yesterday SAC/assessment teams visited Manana and Rabbit islands. I would appreciate learning what they found during their surveys.