Fall 1991 Vol. 14, No. 3

WILDLIFE JOURNAL

Journal of the International Wildlife Rehabilitation Council



Special Topics Issue: Wildlife Care Facilities

Come to Naples and See What's New in Wildlife Rehabilitation!

October 1-4th, 1992

This is our 15th Annual Conference and will be the best ever! We have been assembling an exciting program for our members and along with all the learning will be offering some of our best field trips ever. The conference site is just a short drive away from the Everglades National Park, Ding Darling National Reserve and the Audubon Corkscrew Sanctuary. Our hosts, The Conservancy, have offered the assistance of their interpretive staff to take participants out to see the natural beauty of the area. They also have a wildlife care facility nestled on their expansive property along with education facilities and a great nature/book store that you will want to visit. This is our best site ever and must be seen to be truely appreciated! We have an incredible room rate of $75 per night from the Naples Beach Hotel and Golf Club and we plan to fill the hotel. Some of these rooms have kitchen efficiencies which are available upon request—while still available! For hotel reservations and information call (813) 261-2222. Imagine eating dinner in a restaurant overlooking the Gulf of Mexico, golfing, swimming, windsurfing or taking a hike along the beach! This hotel has it all!

As become our custom, we will be offering skills seminars in advance of the conference for serious rehabilitators wanting to hone their skills. We hope to offer both basic and advanced topics this year (depending on facilities).

Early confirmed program topics include workshops on bandaging, educational use of wildlife, computers in wildlife rehabilitation, fundraising for the 1990's and avian emaciation. We have lots of papers on topics ranging from volunteer management to wildlife care and veterinary care! More program information will be mailed to members in June!

Scheduled Topics as of February 15th

Public Speaking—Cheryl Millham
Choosing Education Animals Workshop—Marge Gibson
Volunteer Coordination—Leslie McCracken
Video—An Effective Tool for Fundraising—Hope Douglas
Bulletin Boards and E Mail Services—Bill Marshall
WR and State Wildlife Agencies: Uneasy Allies or Fast Friends—Marnie Allbritten
Computers for Wildlife Rehabilitation (Workshop)—Tom Millham
Designing a Fundraising Program for the '90's—Dianne Pearce (Workshop)
The Slit-Wrap: An Alternative to the Figure 8 Wrap—Joan Priest
Burrowing Owl Rescue and Rehabilitation in Silicon Valley—Joan Priest
Avian Emaciation Wkshop: Unraveling the Mysteries of Recovery-Jan White, DVM/Louise Shimmel
Rehabilitation of Bobcats—P.C. Hanes
Burn Tx in Raccoons in the 1991 Oakland Fire Storm-Susan Heckley
Emergency Care for Stranded Cetaceans—Dawn Smith, Michael Stone, Kenneth Lee
Rehabilitation of Collared Peccaries/Javelinas—Nancy Umphres and Dina Saldana
Pododermititis in Cormorants—Chris Harvey Clark, DVM
New Advances in the Treatment of Fractures—Flo Tseng, DVM
Isoflurane Anesthesia In Critical Wildlife Patients—Magdalena Menchaca-Martin, DVM
Emergency Treatment of Migrating Wood Warblers—Magdalena Menchaca-Martin, DVM
Intraosseous Fluid Administration in Birds—Janna Wynne, DVM
Bandaging Workshop—Jennifer Ramelmeier, DVM
Euthanasia—Joey Richards, DVM

WILDLIFE JOURNAL

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• The IWRC Journal is designed so you can use a 3-hole punch and store back issues in a binder for easy reference. The *Wildlife Journal* (ISSN: 0893-6560) is published quarterly by the International Wildlife Rehabilitation Council, 4437 Central Place, B-4, Suisun, CA 94585. © 1991 All Rights reserved. No part of the issue may be reproduced in any part without permission of the publisher.

Editorial . . .

Making Wildlife Facilities the Best We Can!

In the pages of this special edition of the *Wildlife Journal* we have brought together a collection of articles detailing the various ways in which facilities are planned and executed. Starting with the home rehabilitator and ending with a new transportable oiled wildlife emergency care center, we have tried to bring to our members the latest information in making wildlife facilities the best that we can.

Twenty years ago planning and building a facility just for wildlife rehabilitation would have been little more than a pipe dream. For many rehabilitators, it still seems like one. However, more and more of us are creating the support mechanisms that enable us to do more than dream. More and more people are asking the question—so how do I plan a facility that will meet our needs in five years when it is built? That is usually followed by the thought—what if we build it and it doesn't work?

We realize it is as yet uncommon for a wildlife center to have a staff veterinarian. However, we have formulated a plan that will allow for a continuum of veterinary care from the scheduled visits of a consulting vet all the way to setting up full-service in-house care with surgery capabilities.

With all the focus in the last few years on oiled wildlife care, we gladly present an article from the oil spill response cooperative, Alaska Clean Seas, which gives the details on how they (and I) designed and built a mobile intake unit that fits inside a C-131 plane and can be flown to a remote location should an oil spill strike! Anyone trying to plan such a facility will want to pay attention to the specifications that are presented here—you won't find them anywhere else in print today.

Although a full-length book could be written on this topic—and we all wish someone would—we have attempted to bring together for our readers' some of the current ideas for facilities.

We hope that you will find the information useful. We look forward to hearing from you regarding the content of this special topics issue!

-Jan White-

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Home Care and Wildlife Rehabilitation: There's No Place Like Home

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Introduction

Wildlife rehabilitation in the home offers some real advantages for both wildlife and wildlife rehabilitators if it is done using good techniques, high standards, and by rehabilitators who are fully aware of their limitations. Umpqua Wildlife Rescue, Inc. (UWR), is a non-profit organization which has been operating a wildlife rescue service since 1988. It has a network of wildlife rehabilitators who do all their wildlife rehabilitation in home settings, handle 500 animals a year on an annual rehabilitation budget of $5,000 or less and maintain a 60% release rate.[1]

The UWR wildlife rescue network was created in response to an urgent need for high quality wildlife rescue and rehabilitation services in Douglas County, Oregon. Douglas County is located in the southwest corner of Oregon and has a largely timber-based economy.

While the demand for a wildlife rescue service was great, the funds and the expertise required for such a service were unavailable from local agencies. There were two private parties and one zoo trying to respond to wildlife rescue calls. Release rates were abysmal, rehabilitation training was non-existent, and, many times, care was unavailable for passerines or smaller mammals.

In November of 1987, Nancy Duncan and I offered a weekend of training in wildlife rehabilitation to interested people in the Roseburg, Oregon area. Over 25 people took the course which was based on both IWRC's Wildlife Rehabilitation 1AB course and our combined years of wildlife rehabilitation experience. Of the first 25 people trained, three went on to become licensed rehabilitators. We were able to generate enough financial support to provide some equipment and supplies to our rehabilitators while operating expenses were covered from personal funds and additional donations.

It was decided during our first organizational meetings that we would provide the highest standard of rehabilitation care possible for the wildlife, continue to offer training in wildlife rehabilitation techniques to interested people, and make a commitment to educating the public about Oregon's native wildlife and its needs. It was also decided during these initial meetings that we would care for the animals in our homes until the organization was able to acquire land and buildings necessary to open a wildlife rehabilitation center.

Care and Feeding

Starting an in-home care center presents many challenges for the wildlife rehabilitator. Setting up seven or eight can quadruple the challenges and the headaches. The most important aspect of Umpqua Wildlife Rescue's program has been the people. A high value has been placed on the support and cooperation that the group supplies to the individual rehabilitators and great emphasis has been placed on a shared system of values and a commitment to consistently high standards of wildlife rehabilitation. Potential rehabilitators who were interested in "wild pets" and the "prestige" of being a wildlife rehabilitator

[1] Our release rate is based on all animals we handle during the year. This includes DOA's which are counted as deaths and also animals we are able to replace in their natural rearing areas. This was the release rate for 1990.

have been quickly weeded out in the process of training and apprenticing which UWR advocates for its volunteers. In addition, special care has been taken to try to consider any special needs a rehabilitator might have. (For example, we have one rehabilitator who works a "normal" 8-5 job and is unable to go out on initial rescue calls or take any birds which need intensive care. She does, however, have an excellent grasp of feeding regimens and a beautiful flight cage. Many of our passerines in need of weathering and final flight training are transferred to her during the final phase of rehabilitation.)

Once a rehabilitator has passed his or her initial training and has become licensed by the state, a box of first aid supplies and initial equipment consisting of cages, scales, gloves, etc. are supplied by Umpqua Wildlife Rescue. These items remain the property of UWR and in the event that the rehabilitator moves away or decides to terminate rehabilitation activities, the equipment is returned to UWR and redistributed to another rehabilitator. The rehabilitator then begins receiving calls from the UWR Wildlife Rescue Hotline and remains a member in good standing as long as he or she continues to ascribe to the Code of Ethics endorsed by UWR and remains active in the meetings and activities of UWR.

We provide ongoing support for the wildlife rehabilitators working with UWR. We have referrals through our hotline and maintain a library of information materials on wildlife rehabilitation and on state, national, and international wildlife organizations. We also have a monthly rehabilitation potluck meeting, part of which is allocated for wildlife rehabilitation concerns and cases. Provisions are made for the volunteers to be supplied with first aid supplies and emotional support when needed. In addition, we have seen a certain amount of specialization among our rehabilitators which has provided us with a number of "home-grown experts" who are available for questions from less experienced rehabilitators at any time.

Growth Rate

Over the past four years of Umpqua Wildlife Rescue's existence, we have seen the following rates of growth[2] .

Advantages

Both our Board of Directors and our membership are now of the opinion that operating from our homes allows us to direct a larger percentage of our donated funds directly to animal care. Other advantages to home care have included: 24 hour care for the animals (i.e. , animals in intensive care situations receive round the clock care and medications that need to be administered every 12 hours are administered *every 12 hours*), a less stressful environment for the animal and the rehabilitator (all of our rehabilitators maintain separate rooms or spaces for their rehabilitation animals which provide proper caging and are out of the normal traffic patterns of their homes), continuous monitoring of the animal by a single individual who is unlikely to miss small changes in the animal's condition, and avoidance of staffing problems (since our rehabilitators can work from their homes, we don't have to worry about filling slots in a schedule).

We've also noticed more direct contact between experienced rehabilitators who are frequently spread thin in "center" situations in order to give good supervision to trainees. This constant interchange among our volunteers promotes creative thinking and provides good emotional support as well. In addition, by keeping several small rehabilitation sites instead of one large one, we've managed to prevent the kind of epidemic diseases that can kill hundreds of birds in captive situations.

Year	#of Rehabilitators	# of Animals	Release Rate
1987	2	17	53%
1988	8	368	51%
1989	12	537	59%
1990	13	486	62%
1991	18	282	69% 1st 6 months.

[2] Based on Umpqua Wildlife Rescue Phone Log and Federal and State records of individual rehabilitators.

Disadvantages

Disadvantages have included: duplicating equipment (everybody has to have a good set of scales and their own cages, gloves, syringes, etc.), having to travel in order to use lab facilities (we do have two microscopes, one centrifuge, and a refractometer that are somewhat centrally located, but it's hard to do tests on a routine basis), and maintaining standardized treatment protocols, record-keeping, and maintenance. In addition, great care has to be taken not to burn out our most experienced rehabilitators. It can become too easy for the hotline coordinator to call the most experienced rehabilitators all the time which not only overloads these valuable volunteers, but can also promote resentment from the less experienced rehabilitators who feel "left out."

One administrative disadvantage is that, without a staff, all the members of Umpqua Wildlife Rescue have to get involved in education, fundraising, cage building, food gathering, newsletter editing, etc. However, this disadvantage also provides all the members of UWR with an opportunity to learn about and understand these very important functions of a wildlife rehabilitation organization and promotes a feeling of camaraderie. Another administrative disadvantage is that the lack of a center can inhibit our fundraising abilities to some extent. Without a facility that the public can visit and make specific contributions to, we sometimes find ourselves without a fundraising focus.

Conclusions

Home care wildlife rehabilitation done in the home setting can be done equally as well as in a wildlife rehabilitation center providing it is practiced with a dedication to good training, good technique and maintenance standards. It is also important for the rehabilitators to know their own limitations, and to be surrounded by a peer group that reinforces high ethical standards and provides support for the rehabilitator.

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Creating A Wildlife Rehabilitation Facility

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Introduction

In the nineties, with construction prices continuing to climb, the thought of building a wildlife center can be quite intimidating. No one wants to spend $300,000--$500,000 on a new building and then find that something was forgotten or spend $10,000 dollars on a cage you use once a year. The most important aspect of designing a new center is recognizing your current needs and extrapolating those needs into the future. Most programs will "benefit" from the publicity of completion of a new center. Naturally the demand from the public will also increase.

There are four basic facets to creating a wildlife facility: 1) Planning, 2) Design, 3) Construction, and 4) Fundraising.

Planning

Planning is the key to creating a facility that is right for your organization. What type of facility you will want to create will depend on what your needs are, both current and projected. Planning should start with an analysis of your records.

Patient-load: What was your patient load last year? How about the year before? Go back at least three or four years if possible to get a sense of the average annual increase in patients. A 15-20% increase is not uncommon. Chart patient load by months throughout the year. What is the number of patients in house at any one time? The purpose of this research is to enable you to design a facility that will not only be able to handle the numbers of patients that you currently treat but also have room for growth. How large you make the center will depend on not only your projected needs but also your financial situation (i.e., how big can you afford to make it?). If you cannot afford to build a facility that will be sufficient ten years down the road, you will probably want to design your facility in such a way that will allow future expansion.

Type of Species: List the species for which you have cared. What are the relative proportions? (e.g., 75% birds? 40% of mammals are deer or squirrels?) Try to predict any changes in types of species you accept. As you grow, will you expand to treat species that you currently are not able to? Do you plan to become more specialized and limit your facility to certain species? The types of species that you treat will be an important determination in designing your center. Passerines, raptors, waterfowl, small mammals, large mammals, aquatic mammals, ungulates, etc., all require very different types of caging.

State and Regional Needs: Analyze state and regional rehabilitation records. How many animals are brought to rehabilitators in your state? In your region? How many deer? How many bears? How many crows? All of this may help you decide what your center may need. For example, perhaps you want to rehabilitate river otters. If your research shows that less than ten river otters were rehabilitated in your state over the last few years, obviously you wouldn't want to build a cage that would be designed solely for river otters.

Patient Care Needs: What type of care have your patients required? How many uninjured orphans? How many required medical treatment? How many required X-rays? How many required surgery? How many needed to be quarantined? These factors will help you determine what type of rooms you will need. A nursery? Surgery room? etc.

Staff, Intern and Volunteer Needs: You will want to make sure that your facility will be able to accommodate your human needs as well as non-human. How large is your staff, intern and volun-

teer corps? How fast and how much growth do you anticipate? Keep in mind that a new center will make you more visible in the community. How much office space do you need? Will you need a volunteer/employee lounge? Do you currently have or plan to have student interns? Will you provide housing? For how many people?

Services Provided: What are your current services in addition to rehabilitation? Education program? Field services? etc. What sort of facilities do they require? Office space, public display area? What other types of services do you intend to provide?

Financial Records: Analyze your center's financial records. It is traditionally easier to raise money once to build a center than it is to raise money for on-going operations. What is your organization's financial outlook and plan for long-term stability? Is your financial base wide or dependent on a few dedicated individuals? What is the regional economic outlook for the next few years?

Once you have waded through your records enough to extract the above information, your next task involves brainstorming.

Analyze your dream: And we don't mean the kind in which you're being chased by an elephant every night as soon as your head hits the pillow. Sit down with the key people in the organization and verbalize your dreams. Do you visualize this as: The biggest, best rehabilitation center in the world? A full-service wildlife hospital with staff veterinarian, surgery, X-ray, pathology, hematology, microbiology? On-site or off-site education with or without non-releasable animals? Veterinary, grad, and student intern programs? Emergency center for large scale disasters? A specialty center that is the model for seabird care (or squirrels or songbirds) throughout the world?

Research other centers: Once you have determined your needs and desires, the next logical step is investigating what other rehabilitators have done to meet their needs. Pick at least a couple of centers that you feel would be beneficial to see and germane to your operation. This can be extremely valuable, since you can draw on other people's ideas and experience. Just remember that there is no perfect center. Ask what has and hasn't worked for them and what they would do differently. Although there is really no substitute for seeing a facility for yourself, if you are unable to travel, call or write to other centers, briefly explain your facility needs and ask for advice and floor plans. Once you have researched other facilities, chances are you will be able to take this information and design a better wildlife center than had you tried to create everything yourself. Remember that bit about re-inventing the wheel. Incidentally, visiting other centers should be an on-going activity for rehabilitators. Like attending the national conferences, it is an excellent way to garner valuable information on many aspects of rehabilitation. Since most people can't afford the time and cost of taking a couple of months off to travel around the country, make it a point to visit wildlife centers whenever the opportunity arises.

Design and Architects

Once you have incorporated your ideas into a rough design or floor plan, then you are ready to start working with an architect.

Buildings for non-profit organizations are often designed by an architect who volunteers to help for a reduced fee. No self-respecting rehabilitator is going to turn down a good deal, right? But before jumping at such an offer, weigh the pros and cons. Usually the volunteer architect has no experience designing this type of facility. It may be money well spent to get an expert's advice, at least to look at the plans. Look for someone who has designed a veterinary hospital or animal shelter. They still won't know all the ins and outs of rehabilitation but they should be familiar with problems such as ventilation, cleanability, etc. Be prepared before you go to the architect. This is where all your planning comes in. If you walk in with ideas and a rough floor plan you have a much greater chance of ending up with the facility that is right for your center. It is important to carefully review the plans with your architect to make sure that everything is done to your specifications. This will be time consuming but necessary.

Design Considerations

Storage: There is never enough storage. Double your estimate.

Division of Space: Consider the following in accordance with your needs. Separate mammal and bird room? Predator and prey room? Nursery? Lab? Where will necropsies be done? Enough office space? Quarters for interns? Volunteer/employee lounge? Separate lobby/admittance room? Will you be raising rodents for food?

Traffic patterns: You will always want to minimize contact and stress for your patients. Minimize traffic through animal care areas. Consider your daily routines (i.e., morning cleaning and

feeding, afternoon feedings, medication rounds and treatments, all day intake, constant nursery feedings).

Light: Skylights are good for photo periods and natural lighting, but won't provide enough light in winter.

Ventilation: Extremely important in disease control and odor control. There should be a complete exchange of air 10-15 times an hour in animal care rooms and each room should be ventilated separately.

Cleanability of surfaces: The newer the building the higher your (and the public's) expectation of cleanliness will be. Remember that you are operating a hospital. Floor drains and easily cleanable surfaces such as tile, formica, and cement are important.

Temperature control: Important for animal care. Individual control for some rooms such as the nursery, surgery, animal care areas and offices are a plus.

Construction and Contractors

Once the plans are workable and to your satisfaction, you are ready to select a contractor. A contractor is usually selected from a bid process arranged by the architect. It's possible that you may know a contractor/builder offering all or some of his services on a volunteer basis. Again you need to evaluate this offer carefully. Remember if you are not paying, you will be working under the contractor's schedule, not yours, and will as a rule have less control overall.

Ideally you would want to plan the construction period during your least busy time of year. But for the northern half of the country weather conditions make this impossible.

It is important to establish a good relationship with the contractor. You will want to be able to monitor the building process to make sure that things are the way you want them and make any necessary changes along the way. There are important details that can easily get overlooked. For example, at HOWL Wildlife Center, the hatch doors between outdoor cages were built to be opened from the inside rather than the outside where we wanted them. This was a mistake that could have been avoided if we had been monitoring the building process more carefully.

Fundraising

Raising money to build a facility is beyond the scope of this paper, but the following points may be useful.

Cost Estimates

A rule of thumb is that it's probably going to cost more than original estimates. In that way wildlife centers are no different than art museums, new homes, Hollywood films, or mass transit systems. If you think you are going to build a $300,000 facility, plan to raise $400,000 or be prepared to cut corners if the bids come in higher than what you expected. If you are lucky enough to have the bids come in as planned then you can always use the additional money for that extra cage you wanted or bank it for operating costs.

Timing

It is easier to raise money for a building that hasn't been built yet. So try to raise all the money you need before the building is completed rather than trying to raise the remainder after the fact. It's just harder to get people to give you money for something you already have. It does work however, to raise money to equip the center after the facility has been built.

Strategy

There are a million different approaches to raising money for a new facility. The most successful capital campaigns usually involve the organization's donors, the community, local foundations and corporations. The media should be used to the fullest extent possible to publicize the campaign. If you have a professional fundraiser on staff, your job will be easier. If not, you may want to consider hiring one just for this project. Be sure to check out his/her track record. A local advertising agency may be willing to come up with a clever publicity campaign gratis. Having a strong board of directors is most beneficial when it comes to raising money. If, however, you have an inexperienced or weak board and a professional fundraiser is beyond your resources, don't give up. Many organizations have raised money for a new facility solely by the determination of its director and key people. Where there's a wildlife rehabilitator, there's a way.

Note: The floor plan for HOWL Wildlife Center is featured on the inside back cover of this issue.

Designing a Veterinary Program for the Wildlife Rehabilitation Center

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Introduction

The objective of this article is to detail the necessary considerations in incorporating a successful veterinary program into the wildlife rehabilitation center. As wildlife rehabilitators become more sophisticated in their approaches to the care of sick, injured and orphaned animal species, the need for prompt, proper veterinary care becomes more apparent. The inclusion of veterinary facilities within the actual rehabilitation center offers many advantages. These include:

1. Better quality veterinary care: When a medical emergency arrives, the veterinarian is on-site to evaluate the animal and to direct the case management. For routine cases, having a staff veterinarian will provide more consistent, timely medical care for a greater number of patients. Even the most cooperative of consulting veterinarians still needs to maintain a schedule of appointments for his/her practice, often resulting in a process of "case selection" for which animals can be seen at any given time or at all. Fitting wildlife emergencies into a schedule that competes with regular clients can sometimes be difficult and can sometimes result in less than adequate medical care.

Additionally, having a staff veterinarian will allow for more on-site diagnostics or screening procedures for the animals entering the wildlife rehabilitation program. With the staff veterinarian monitoring animal care, "trouble shooting" for institutional problems (e.g., disease contagion, zoonotic hazards, mystery illnesses) becomes easier. Unlike a consulting veterinarian, the staff veterinarian is on-site and can observe many subtle clues that may yield the answer, instead of relying on the staff to describe the situation, hoping to ferret out the clues in that manner.

2. More efficient utilization of staff time: When there is a veterinary facility at the wildlife rehabilitation center, your staff will save time that normally would be spent transporting animals to and from the consulting veterinary hospital and waiting for the procedure to be finished.

3. Less stressful to the animals: As all of us are aware, wildlife species are already contending with the tremendous stress of captivity in the rehabilitation center. If this animal needs to be transported to a consulting veterinary hospital, this adds to the stress of its captivity. An onsite veterinary hospital serves to decrease this stress, thus contributing to a more successful outcome in our efforts.

4. May be more economical: After the initial expense of setup, the center will be able to save on veterinary consultation fees. As nonprofit organizations, wildlife centers are also in a position to accept donations of medical supplies and equipment, thus keeping expenses down. In addition, a staff veterinarian with wildlife expertise should be able to provide medical advice, e.g., in nutrition, that may be more cost effective in the long run as well as result in an increased rate of survival and thus release.

5. Coordination of clinical research efforts: The numbers of wild animals that come through the average rehabilitation center afford a unique opportunity for clinical research. An established veterinary program should take advantage of this opportunity to provide data for future successful treatment efforts.

6. Good educational opportunities: Establishing a veterinary program will serve to expand educational opportunities for both volunteers and staff.

7. Good opportunity for favorable public relations: Once you become a full service rehabilitation center, you enhance the professional image of your wildlife organization. This will result in more favorable opportunities for fundraising with the potential for funding for needed research as well.

Options

There are several different options available in designing an infacility veterinary program. These include setting up a full service veterinary hospital in your facility with a part-time or full-time veterinarian on staff, setting up a full service veterinary clinic in your facility with a consulting veterinarian available on a regular schedule and for emergency situations, or setting up partial veterinary services in your facility, e.g. X-ray, surgery, and/or laboratory, and using a consulting veterinary hospital or clinical laboratory for the rest. This last option may be a good way to get started, e.g., setting up laboratory equipment is relatively inexpensive.

Which option is best? Each organization has to evaluate their needs and priorities. Obviously, my preference is for setting up the most complete services that economics and physical facilities allow. The more complete the care that you are able to give the animals under your supervision, the more successful you will be in reaching the ultimate goal of releasing those animals. However, another approach is to set up a laboratory with basic equipment, then, while utilizing a consulting veterinary service, arrange for them to make regularly scheduled visits to the center, eventually hire a part-time staff veterinarian, and then go to full-time based on the caseload and financial resources of the organization.

Considerations

Some of the considerations in setting up an in-facility veterinary program include planning ahead in designing your facility. Even if you are not able to begin an infacility veterinary program at this time, think about the possibility of such a program in the future and plan for space accordingly. You'll need separate areas for taking X-rays, for laboratory work, for surgical preparation and for performing surgery.

The key to a successful infacility veterinary program is finding a veterinarian who is experienced in diagnosing and treating the various wildlife species that you will see. This person must be familiar with the numerous considerations involved in wildlife rehabilitation and be willing to work with the facility staff to integrate the veterinary program with the rehabilitation program.

It is also useful to have other consulting veterinarians who can provide additional medical opinions or veterinary specialties and be available for relief work when the primary veterinarian is out of town.

It is also important to form facility policies for medical and surgical treatments of the animals, a "herd health" plan. This should be part of any wildlife facility even if you are not able to have a full service veterinary program at this time. The plan should encompass every aspect of medical care, including the following:

Admissions - data necessary to ensure a good clinical history.

Patient identification techniques - eartags, bird bands, etc.

Initial evaluation - what constitutes a true medical emergency warranting immediate attention, the components of a thorough physical examination, what conditions would best be handled with humane euthanasia.

Initial treatment methods - what drugs to use for certain common clinical presentations, how to treat for shock, when and how to stabilize fractures, etc.

Husbandry considerations - caging, feeding, etc., as they relate to the medical treatment of the animal as well as the rehabilitation considerations (e.g. , cleaning) and the animal's needs.

Diagnostic options for different clinical problems - blood work, X-rays, fecal analyses, etc.

Treatment options for different clinical problems - medical vs. surgical methods.

Rehabilitation considerations - exercise, acclimation to outdoor temperatures, natural diets, etc.

Release criteria - basic guidelines for release can become an intergal part of the program which will increase the quality of the health of the animals that are released. Baseline PCV's, total proteins, weights, etc., can be utilized to ensure that the animals that are released have a strong chance of living a normal life.

With this herd health policy in mind, one can then design an intelligent veterinary facility that makes it easier to accomplish the goals of your policy.

Components

Good Recordkeeping System: This should include data from the finder that gives you information on relevant clinical history, a written record of

your initial physical examination, initial treatment, diagnostic procedures and followup treatments, relevant husbandry data, and final disposition.

Examination Room: This should be a separate room from your receiving area that can be used for initial examination and treatment. It should be stocked with equipment such as cages for housing new patients, handling and restraint equipment, heat sources, weight scales, diagnostic equipment, e.g., stethoscope, ophthalmoscope, pen light, thermometer, etc., materials for initial treatment such as bandaging materials, commonly used drugs and whatever is used to identify individual animals, e.g., bird bands, eartags etc.

Laboratory: The most important capabilities that a good veterinary laboratory should have are the ability to perform reliable fecal analyses, urinalyses, complete blood counts (CBC), examination of cytological specimens and preparation of materials for more full service diagnostic laboratories. The ideal laboratory is a separate workplace that is relatively dust and vibration free. This will enable instruments such as the microscope to function more efficiently. Necessary equipment includes:

1. For performing fecal analyses: Fecal flotation devices, flotation material (e.g., Fecasol™; Evsco, Buena, NJ), microscope slides and coverslips, microscope and a good guide to parasitology of wild species, e.g., *Veterinary Parasitology Reference Manual* by William Foreyt, Ph.D., College of Veterinary Medicine, Washington State University, Pullman, WA 99164.

2. For urinalyses: Centrifuge tubes, centrifuge, microscope slides and coverslips, Sedistain™, refractometer, urinalyses strips and a good guide to reading urine sediment. One such book is the *Handbook of Canine and Feline Urinalysis* by Carl Osborne and Jerry Stevens which is produced by Ralston Purina Company, Checkerboard Square, St. Louis, Missouri 63188.

3. For performing CBCs: Hematocrit tubes, clay, centrifuge, scale for reading PCVs (or a xerox of one), refractometer, Unopettes™, No. 5853 (Becton-Dickinson, Rutherford, NJ) for mammal white blood counts, No. 5877 for reading avian granulocyte counts, hemocytometer, microscope with an oil immersion lens, microscope slides for blood smears, Wright's Dip Stat™ (Medi-Chem, Inc., Santa Monica, CA) or equivalent rapid staining method for staining blood smears, immersion oil, differential counting device. An excellent color guide to avian hematology is *Avian Hematology and Cytology* by Terry Campbell, Iowa State University Press, Ames, IA. A basic color guide for mammalian hematology is *A Morphology of Canine and Feline Blood Cells* by Lon Rich produced by Ralston Purina in Checkerboard Square, St. Louis, Missouri 63188.

4. Culturettes and other materials for submission to full service diagnostic laboratories. There will be certain procedures that you will want to perform from time to time that are more easily performed at reference laboratories - e.g., blood chemistries, histopathology from necropsy samples, culture and sensitivities, testing for toxins, e.g., lead, pesticides, etc.

X-ray Facility: Most wildlife clinics need to take radiographs on an almost daily basis. For instance, animals that present with paresis or paralysis of the extremities may have spinal column damage and a good radiograph will oftentimes reveal a fracture or displacement of the vertebrae. Subtle wing droops from the shoulder may be the result of clavicle or coracoid damage that is not easily palpated but is easily visualized on a good radiograph. Penetration of the body tissues with shot may not be apparent from visual inspection but will be very obvious on X-ray. You are always able to more completely assess the extent of a fracture with good radiographs. If you are contemplating surgical fixation of a fracture, it is imperative to have good X-rays in order to plan the proper surgical technique.

It is desirable to have a separate room to house your X-ray machine. This serves to limit any exposure from radiation. In addition, most machines will also require special electrical hookups, such as a 240 volt, 100 amp. breaker, and 30KVA single phase distribution transformer. The first component of your X-ray facility is a reliable X-ray machine. As with other veterinary equipment, there are a variety of options to choose from when selecting an X-ray machine. These run from the use of small dental units to portable units for radiographing equine legs to larger freestanding units designed for the veterinary office. Of course, the smaller the unit, the less powerful its capacity, but your costs will be considerably decreased.

Many used machines may be found through local private physicians or hospitals that are upgrading their facilities. There may also be firms in your area that deal in used X-ray equipment - these companies will oftentimes provide warranties for the equipment, thus reducing your risk in obtaining used equipment.

Before you begin looking for an X-ray machine, you must first determine what your needs are, i.e., what species you intend to treat and will need to X-ray. There are many varieties of X-ray machines available but, in general, look for a system that has the flexibility to take radiographs on very small, fast moving species such as small passerines, to larger species such as deer or bear. A 300 mA x 125 kVp system is a good standard for accomplishing these purposes. New machines are wonderful since you are certain about their reliability, safety, etc., and they will come with warranties. However, if this is not in your price range, look for a used machine and have it checked out by a reliable person or company that deals with these machines. For instance, you want to be sure that you have no scatter of the X-ray beam that may endanger your personnel.

Your system should be set up so that you minimize the amount of time your personnel actually have to hold the animals in place for the radiograph - ideally, all animals should be restrained in such a manner that the personnel are shielded behind lead walls from the X-ray beam and in some states this may be required by law. This will oftentimes require that animals that can be are anesthetized and that those that cannot be anesthetized are held in place by restraint devices as simple as masking tape or as complex as special ready-made Plexiglass forms. The machine should be provided with a remote switch that can be operated by personnel that are placed at a safe distance from the X-ray beam. (Check for any state safety requirements for lead lined walls in the room where the X-ray machine is located.)

In addition, for those times when personnel are needed to actually restrain an animal for an X-ray, your facility must be equipped with protective clothing (i.e., leaded aprons, gloves and thyroid shields) for them to wear. All personnel that will be working with the X-ray equipment should have film badges that are worn whenever they are taking a radiograph. These badges are then sent to companies that will measure the amount of radiation exposure on a monthly basis. Most states will also require an inspection of your X-ray equipment to ensure that you meet their safety requirements. Before setting up an X-ray system, check the state requirements, as they may vary.

Other necessary equipment includes film cassettes (various sizes available, 5x7", 8x10", 10x12", 11x14", 14x17") and accompanying X-ray film. There are a large variety of screens contained in the cassette and films available that when combined, yield varying degrees of detail, requiring varying exposure times, etc. In general, I like to obtain rare earth screens in the smaller cassette sizes for taking detailed radiographs on small species such as passerines. I need less detail when radiographing larger species such as deer. You will also need identification markers and a caliper for measuring body thickness.

It is necessary to have an area to develop your radiographs that is capable of being lightproof. Most facilities develop their films with a manual processing system, however, any facilities that take large numbers of radiographs may want to investigate the use of a dry processing system that eliminates the need for the developing tank and chemicals. For a manual processing system, the facility should have a developing tank that is equipped with hot and cold water inflow and drain, developing and fixer solutions, thermometer to measure water temperature, agitator to stir solutions, safelight, timer, hangers and drying rack for wet film and film bin for film storage. It is also necessary to have a viewbox to adequately view your completed films. Some centers also have made arrangements to take exposed film to a local clinic for development until a processing system can be added to their program.

***Surgical Preparation Area*:** Ideally, a separate area should be designated for preparing animals for surgery. This is because the preparation techniques involve clipping hair, pulling feathers, etc. and these techniques will oftentimes result in nonsterile contamination of your surgical suite. This area should be equipped with clippers, water soluble lubricating jelly to smooth feathers away from the surgical site, and antiseptic solutions such as povidone-iodine or chlorhexidine and alcohol to prepare the surgical site for sterile surgery.

The surgical preparation area should also be equipped with a sink that allows the surgeon to scrub for surgery. Foot-operated controls for turning the water on and off are nice in order to reduce contamination of the surgeon's hands after scrubbing. This area should also contain surgical gowns, gloves, masks and bonnets for operating room personnel to wear while performing surgery.

In addition, it will be necessary to have an area that can house an autoclave, a device used to sterilize instruments and other materials for surgery. You'll need material in which to wrap instruments and other items, autoclave tape and products that are used to properly clean and lubricate those expensive surgical instruments.

Anesthesia Equipment: Anesthesia will be necessary if you are performing any surgical procedures. This may be as simple as sedation with injectable drugs or involve the use of gas anesthesia.

A gas anesthesia system is preferred if the procedure to be performed involves deep pain or is expected to last any length of time. There have been many different anesthetic gases used in the past but for wildlife work at the present time, the use of isoflorane (Forane; Anaquest, Madison, WI) is recommended. This inhalant anesthetic agent produces rapid knockdown, safe, effective anesthesia for the animal and an equally rapid recovery rate. In addition, it is considered virtually safe for operating room personnel. In order to administer the gas anesthesia, your facility will need an anesthesia machine equipped with isoflorane vaporizer, nonrebreathing system, oxygen tanks and hookup, a scavenging system for waste anesthetic gases and a variety of endotracheal tubes for administering the gas anesthesia down the trachea of the animal.

A laryngoscope aids in passing the endotracheal tube down into the proper site. In addition, the author prefers the use of an esophageal stethoscope or some sort of monitor (APM, EKG) to track the patient's heart rate and rhythm during the surgical procedure.

Surgical Facility: A good in-shelter veterinary facility should have a separate room for performing sterile surgery. This area should have adequate ventilation to decrease the possibility of airborne contamination. Ideally, a positive pressure ventilation system can be established - this allows the passage of 15 changes of air per hour (if air exhausts to the outside) or 25 changes per hour if using recirculated air (Slater, 1985). You'll need your anesthesia machine set up alongside a surgical table. Ideally, the surgical table should be hydraulic, enabling it to adjust in height, and capable of tilting up and down, thus making some surgical approaches easier. A circulating hot water pad placed on the stainless steel surface of the table provides a means of maintaining patient body heat during any surgical procedure. A ceiling mounted surgical light centered over your table is necessary in order to provide adequate visualization during surgery.

The types, numbers and expense of surgical instruments that will be necessary will be dictated by the types of surgery to be performed. Are you only going to do minor soft tissue work, e.g. suturing wounds closed, or are you going to get involved in major orthopedic repair techniques? A fully equipped surgical suite will have, at a minimum, one pack with small surgical instruments for soft tissue work, one pack with larger

Table 1

Small surgery pack:

1 pr. needleholders, e.g., 4 3/4" Olson-Hegar
1 pr. straight Metzenbaum scissors, e.g., 5 1/2"
1 pr. curved Metzenbaum scissors, e.g., 5 1/2"
1 pr. straight Mayo scissors, e.g., 5 1/2"
1 pr. rat tooth forceps, e.g., 4 1/2", 1x2 teeth
1 pr. atraumatic forceps, e.g., 4 1/2" dressing forceps
1 scalpel blade holder
4 towel clamps, e.g., 3 1/2" Backhaus
6-8 hemostats of varying sizes
2 Alice tissue forceps, e.g. , 6", 4x5 teeth

Large surgery pack: Same instruments as above but larger size.

Orthopedic pack:

Jacobs chuck and key
K wire vise
K wire cutter
Wire twister
Kern bone forcep with ratchet
Mallet
Rongeur
Bone file
Osteotomes
Periosteal elevators
Assorted intramedullary pins
Assorted K wires
Pin pack
Wire cutters

Additional orthopedic equipment:

Cast cutter
Splinting material
Stainless steel suture wire, various gauges

Ophthalmic pack:

Scalpel blade holder
Needleholders
Forceps
Iris scissors
Lid retractors
Suture scissors

surgical instruments for soft tissue work, an ophthalmic pack for eye work, and orthopedic instruments. If finances allow, a suction apparatus and electrocautery capabilities are also nice to have.

The contents of the surgical packs have been outlined in detail in Table 1.

Technical Staffing: Lastly, no veterinary facility will work unless you have personnel trained in assisting the veterinarian. Veterinary technicians are schooled for two years in all aspects of veterinary assistance, but your rehabilitation personnel are also capable of learning most of these techniques with on the job training. Any assistant will have to learn wildlife restraint techniques, laboratory techniques, especially running blood work and fecal analyses, anesthetic techniques for a variety of species, noting the wide differences in anesthetic maintenance for birds vs. mammals, etc., and have training in surgical preparation and sterile surgical procedure.

Costs

At this point, many readers will be wondering about the expenses involved with setting up a vaterinary facility. These will obviously vary from one region of the country to th other, but some generalizations may be made.

Much of the equipment mentioned in theis article can be obtained in used form from veterinary and physicans' office as well as local hospitals - thus saving much of the following expenses. Prices for seleced New equipment are described in Table 2.

Summary

In conclusion, there are many considerations involved in starting an in-shelter veterinary facility. These include intelligent planning of the physical facility, finding the proper personnel to run the veterinary program, and locating the necessary laboratory, anesthetic and surgical equipment to institute a first-rate program.

Finances are bound to be a major factor in dictating the extent of the veterinary facility - however, we have found that it is easier to raise funds for the specific needs of this program than it is for less "glamorous" (though still very necessary) needs such as general operating expenses. Don't let financial considerations stop you from considering establishing such a program in your facility. Your rehabilitation work and the animals in your care will ultimately benefit greatly from the institution of a complete veterinary program.

References

SLATTER, Douglas. 1985. *Text Book of Small Animal Surgery.* Philadelphia: W.B. Saunders Co. p. 286.

Table 2

Item	***Approximate Cost When New***
Laboratory:	
Binocular microscope	$1,000-$1,500
Centrifuge	$1,300
X-Ray Room:	
5 gallon stainless steel developing tank	$700
1 set protective clothing for X-ray (lead gown, gloves, thyroid shield)	$250
Light tight film storage box	$300
X-ray viewer	$150-200
Set of 3 X-ray cassettes (8 x 10", 11 x 14", 14 x 17")	$1,300
300 mA x 125 kVp X-ray machine	$10,000
Anesthesia:	
Complete system with isoflorane vaporizer, nonrebreathing system, f/air scavenging system, asorted endotrachael tubes and masks.	$4,000
Audio patient monitor	$200
Surgery:	
Ceiling mounted surgical light	$1,500
Hydralic surgical table	$1,300
One pac of soft tissue surgical instruments	$350
Orthopedic pack	$500-750

Wildlife Response on the Alaskan North Slope

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Introduction

Protection of wildlife is a particularly important component of oil spill response, particularly in the initial hours of an incident. Recognizing the need for a comprehensive plan to deal with the potential of oiled wildlife on the Alaskan North Slope, Alaska Clean Seas (ACS)[1] worked with government agencies to develop a wildlife protection strategy. ACS brought together a joint industry/government Wildlife Task Force to formulate this strategy.

As a starting point, the Task Force used the Wildlife Guidelines for Alaska in the Alaska Region Oil and Hazardous Substances Pollution Contingency Plan produced by the Alaska Regional Response Team (ARRT). The guidelines identify a three-tiered response strategy:

1) **Primary response**-controlling the release and spread of spilled oil at the source to prevent or reduce contamination of potential affected species and/or their habitat,
2) **Secondary response** - keeping affected wildlife away from oiled areas through the use of deterrent techniques and
3) **Tertiary response** - capture and treatment of oiled wildlife.

The Wildlife Task Force adopted the response strategies developed by the ARRT and concurred that primary response will also take place on the North Slope and that equipment, manpower and techniques to handle primary response effectively were already in place. Subsequent effort was therefore concentrated on the secondary and tertiary responses.

To assist in the development of the secondary response, the task force called upon the services of Paul O'Neil, a wildlife deterrence specialist from the U.S. Dept. of Agriculture. Based on a list of key species, identified by the Task Force (all birds, polar bear, grizzly bear, musk ox, caribou), Paul recommended a list of equipment that would be most effective for deterrence. In addition, based on his knowledge of the quantities of equipment required to mount a deterrence operation, an inventory level was established.

The inventory includes a comprehensive range of pyrotechnic equipment, active and passive scare devices, and ancillary equipment such as 5,000 feet of electric fencing.

The tertiary response was somewhat more complex and was developed over several months. This paper will focus on the planning and implementation of a tertiary response for the North Slope area.

Tertiary Response Plan

The Wildlife Task Force considered the advantages and disadvantages of having a complete, long term rehabilitation center on the North Slope versus one located in a more central location within Alaska with less harsh climatic conditions. Timing of these discussions was concurrent with several private initiatives for the establishment of long term rehabilitation facilities in Anchorage.

An initial decision was made to proceed with a capture and stabilization facility for the North Slope as a minimum, to ensure the process was not delayed. Shortly after this action, International Bird Rescue Research Center (IBRRC) decided to establish a long term facility in Anchorage. Substantial initial support for this undertaking was provided by ACS, Alyeska Pipe-

[1] Alaska Clean Seas is the oil spill response cooperative for Alaska's North Slope oil exploration, production, and pipeline operations as well as Alaska North and West coast offshore exploration activities. Current members of the cooperative include all major oil exploration, production, and pipeline operators in Alaska. ACS provides manpower and equipment to respond to an oil spill. In addition, training, research and development, and contingency planning is carried out on behalf of its member companies.

line Service Co. and Exxon.

Development of a Wildlife Stabilization Center

Recognizing the potential of a large spill on the North Slope to oil several hundred birds and a variety of small mammals, a decision was made to develop a wildlife stabilization center. The primary focus of the center isthe stabilization of birds. Jan White, DVM, then Operations Manager of International Bird Rescue Research Center (IBRRC), provided technical advice on the recommended size of the facility and its operating requirements. The following design criteria were established for the facility:

- Capability of handling up to 150 small birds and 200 geese at one time;
- Ability to provide on demand 106°F water continuously;
- Ability to take vital signs, do blood work, rehydrate and stabilize birds;
- Facility to be operational on stat notice (hours);
- Ability to provide long term rehabilitation for up to 10 birds;
- Ability to handle up to 10 small terrestrial mammals;
- Minimum of 6,500 sq. ft. of warehouse space;
- Maintain 75°F air temperature in the building; and
- Ensure four air changes per hour in the building.

ACS designed and constructed the facility in close cooperation with IBRRC. Utilizing in-house engineering and construction expertise, ACS staff prepared a unique design consisting of two self-contained, air-transportable modules. In an emergency, the two modules can be air-lifted by C-130 Hercules aircraft. The modules were custom built at ACS facilities in Anchorage during July of 1991 and took thirteen days to complete. They were subsequently shipped to the North Slope, arriving in early August.

A capture and stabilization facility requires a large warehouse area for the layout of bird pens and cleaning tables. ARCO Alaska, Inc., the operator of the Eastern half of the Prudhoe Bay oil field, made available a 10,000 sq. ft. warehouse as a stabilization facility in the event of a spill (Figure 1). The warehouse is normally used as a fabrication shop for operations support work. The new wildlife modules, complete with prefabricated bird pens, are permanently located in a corner of the warehouse. Within 24 hours of notification, the warehouse can be cleared of equipment and materials associated with normal use, the bird pens set up and the facility made operational.

An initial concern over having the warehouse as the designated stabilization building was that it had a compacted gravel floor. The floor could not be washed down to keep it clean and minimize the risk of disease. This problem was overcome by having an industrial pit liner (23 mil) specially fabricated for the warehouse floor. During an actual spill approximately 9,000 square ft. of the warehouse can be covered with a rolled out 60' x 150' pit liner. Two sump pumps at each side of the building have been installed to provide for draining of the floor. The pit liner is also stored permanently at the warehouse.

Wildlife Modules

The mobile wildlife treatment center consists of two modules: a lab and a utility building (Figure 2). The two modules provide 265 square feet of enclosed space. The modules are constructed with a lower steel frame, linoleum covered plywood floors, 2" x 4" walls and metal siding. The outside dimensions of each module are designed so that they are able to be placed in a C-130 Hercules aircraft and rapidly transported by air to an emergency area. The modules are prewired and pre-plumbed to allow for rapid installation.

The lab module consists

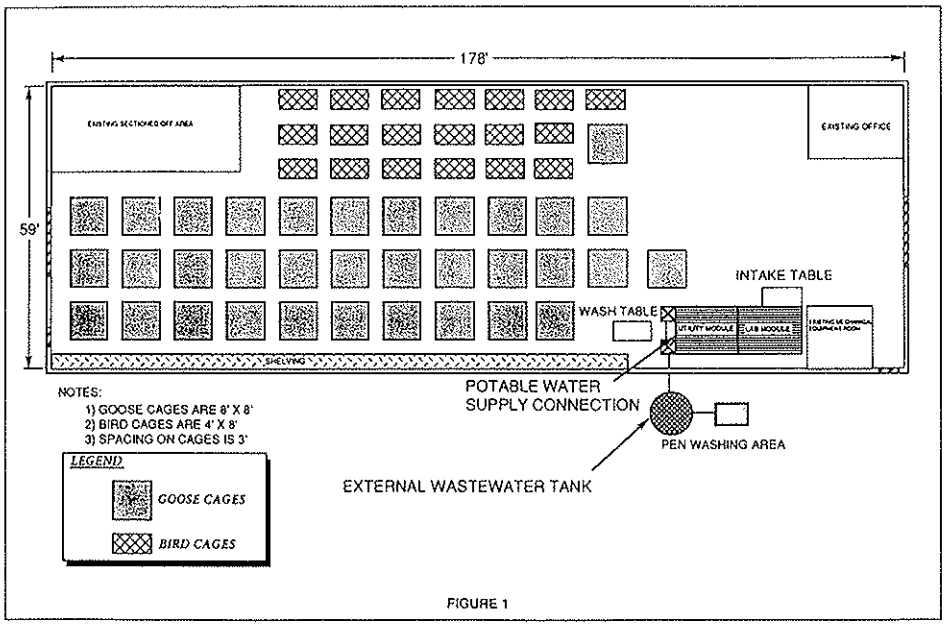


FIGURE 1

ALASKA CLEAN SEAS NORTH SLOPE WILDLIFE TREATMENT CENTER

of a working area for veterinarians and a storage area for veterinary supplies. It contains counter space for viewing microscope slides and conducting various tests. The lab module is outfitted with: a microwave oven, refrigerator, chest type freezer, centrifuge, microscope, refractometer, digital weight scale, a variety of veterinary supplies, and fax and phone.

The utility module provides the various components necessary for the design requirement of 106°F water on demand. The utility module contains the following components:

- Water softener
- Water filters
- Thermostatic water controller
- Electric booster water heater
- Commercial electric water heater
- Sump tank (80 gallons)
- Washer and dryer
- Two sinks

The plumbing design provides for delivery of water to in-module sinks and washers as well as to two external bird wash basins. Control circuits prevent operation of the system in the event of either low water or high pressure. The internal grey water tank has both a low level and high level automatic sump system.

The key component in the delivery of on demand 106°F water is the installation of the thermostatic water controller. This controller, when pre-set, insures that all required regulated water remains at 106°F. This installation frees the washers from having to regulate the water temperature manually.

The electrical scheme consists of both standby and activated circuits. The standby scheme provides heat and lighting in the facility. The activated circuit comes on line when the hot water system is in use. The activated circuit requires hooking up a 150 KW portable generator.

Holding Pens

Initial design criteria, established by IBRRC, required that each goose pen hold 6 geese and that each small bird pen hold 8 birds. The establishment of a holding capacity of 200 geese and 150 small birds required that 34 goose cages and 19 bird cages be built.

The 34 pre-fabricated goose pens are constructed of 3/8" plywood and are attached with screws to allow for easy deployment and subsequent dismantling. 2" x 2" posts provide the structural support to allow the pens to sit on the pit liner. A 36" cut-out provides an opening to place the geese in the pens. Each goose pen is designed to hold six geese (Figure 3).

The 19 pre-fabricated bird pens are constructed of 1/4" plywood and are also attached with screws. The pen legs are constructed with 2" x 2" posts. Each pen has a bottom that is constructed of 1" diameter PVC piping that is press-fit together to allow for dismantling. Netting is stretched around the frame to provide a floor. The netting is attached to screws placed at a 3" spacing around the perimeter of the PVC frame. These pens hold 8 birds each (Figure 4).

During activation of the Wildlife Treatment Center the pens are placed over the lined floor. A spacing of three feet between each pen allows for the

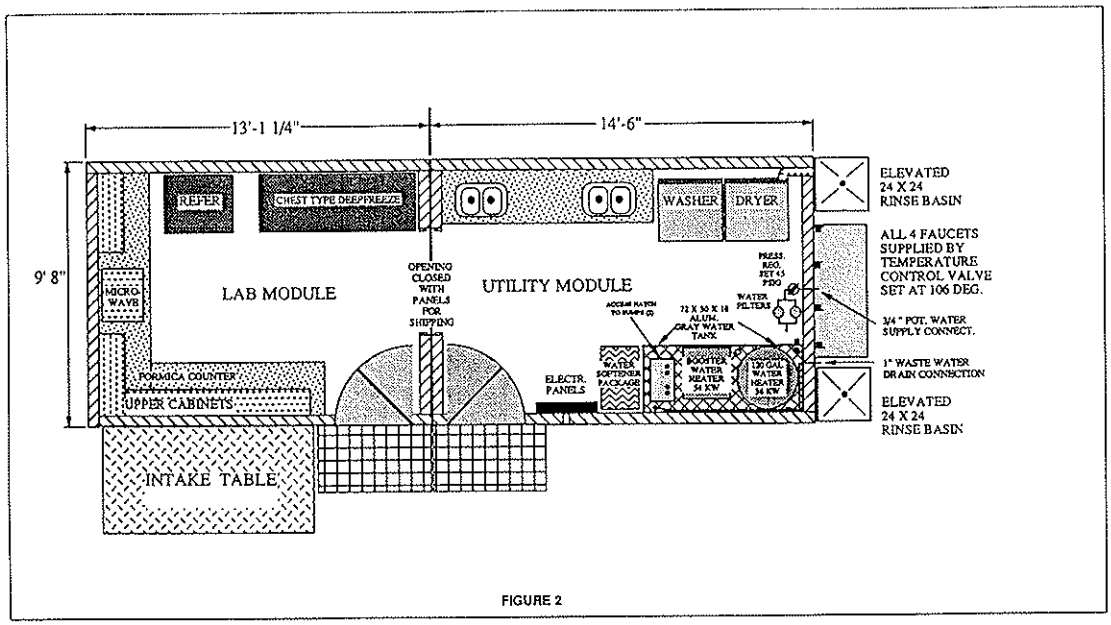


FIGURE 2

LAB/UTILITY MODULES

convenient placing of birds and general moving about by workers. In addition, 10 small steel cages are kept in inventory for holding small oiled mammals.

Wash Area

The bird wash area consists of two externally mounted (and removable) 24" x 24" elevated rinse basins. These rinse basins are adjustable and provide for several different height settings. Both wash basins have a shower overhead. A counter with two faucets provide a place for filling the wash tubs.

Bird Care Process

A four step process is in place for handling birds (Figure 5). Initially, oiled birds will be examined at the intake table for any injury, and then weighed, banded, gavaged and blood samples taken (i.e., PCV, Total Solids, and two blood films). From the physical examination and hematology data, birds are ranked for washing. Those not stable yet, are given additional feedings and fluids prior to re-entering the wash sequence.

Depending on the event, birds may or may not be washed on-scene at this facility. Some volatile oils and fuels have a lot of fumes and birds may require a quick-wash/rinse to reduce the fumes so that lung damage is minimized.

The washing process begins by placing the birds in consecutive tubs of a soap solution and water mixture (1% Dawn dish washing solution) until oil no longer appears in each new tub in which the bird is placed. Thirdly, the birds are placed in the wash basin and rinsed for approximately 20-45 minutes. Finally, the birds are dried in the assembled cages equipped with commercial pet dryers and prewarmed to about 85-90°F.

Birds that do not require immediate washing can be stabilized with fluids (e.g., Lactated Ringers) and warmth. (A complete review of the medical treatment of oiled birds has been authored by Jan White, DVM and is available from IWRC). Blood samples are taken to give an initial assessment of the animal along with the results of the physical examination. Once stable, birds are placed in airline carriers and transported by air to the long term care and rehabilitation facility in Anchorage (Alaska Wildlife Response Center).

Training

A critical component of the North Slope Response Strategy is ensuring that trained personnel are available so that capture/stabilization is conducted properly and safely. ACS arranged for the development of specialized training in this area.

IBRRC developed a 20 hour course for ACS that deals with the specifics of capture, evaluation, treatment and blood sampling, stabilization, cleaning and husbandry of oiled birds. Hands-on training is provided utilizing domestic ducks.

Only trained personnel who have successfully completed the above noted course would be utilized on the North Slope to fill capture/stabilization roles. Each of the Operators on the North Slope has personnel trained in bird capture and stabilization. ACS plans to continue these courses as part of its on-going training program.

Arrangements are also in place with IBRRC to provide licensed veterinarians to respond to the North Slope and assist in the operation and management of any wildlife response.

Conclusion

The construction of the North Slope Wildlife Treatment Center represents a substantial increase in the ability of the North Slope operators to effectively respond to the treatment needs of wildlife in the event of an oil spill. The Wildlife Treatment Center, when operated by trained personnel, provides an immediate response capability that should reduce the impact on wildlife.

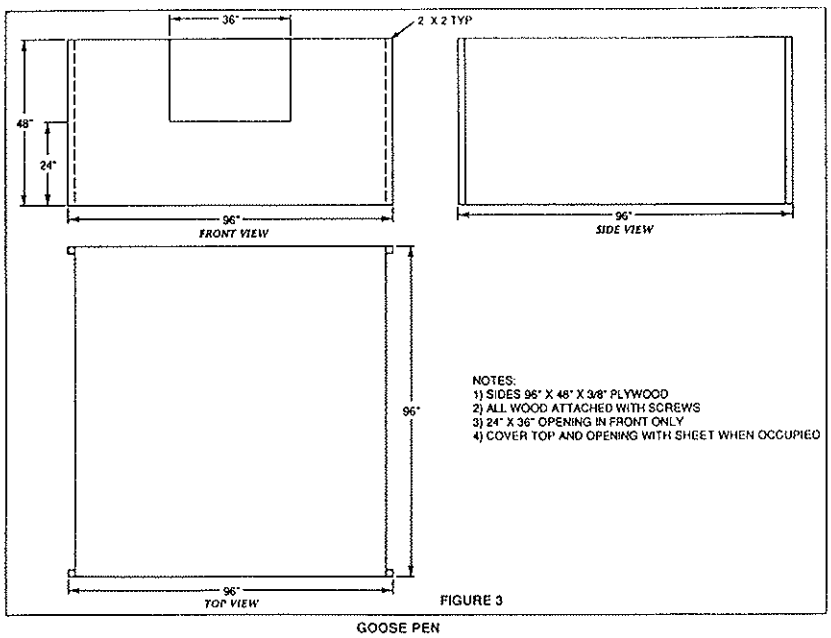


FIGURE 3
GOOSE PEN

Response criteria requires that the facility be operational within 24 hours of alert. Subsequent deployment exercises have shown that initial on-site activation can be accomplished in about 2 hours. Full operation with necessary utilities to support washing and rinse activities takes approximately 5 hours. These times can be achieved through the utilization of knowledgeable technicians familiar with the facilities.

The unique air-transportable features of the Wildlife Treatment Center allow the option to utilize the facility at a remote spill site.

The mutual cooperation of the International Bird Rescue Research Center, Alaska Clean Seas and ARCO Alaska, Inc., provided the varied input, both technical and operational, to ensure a successful project.

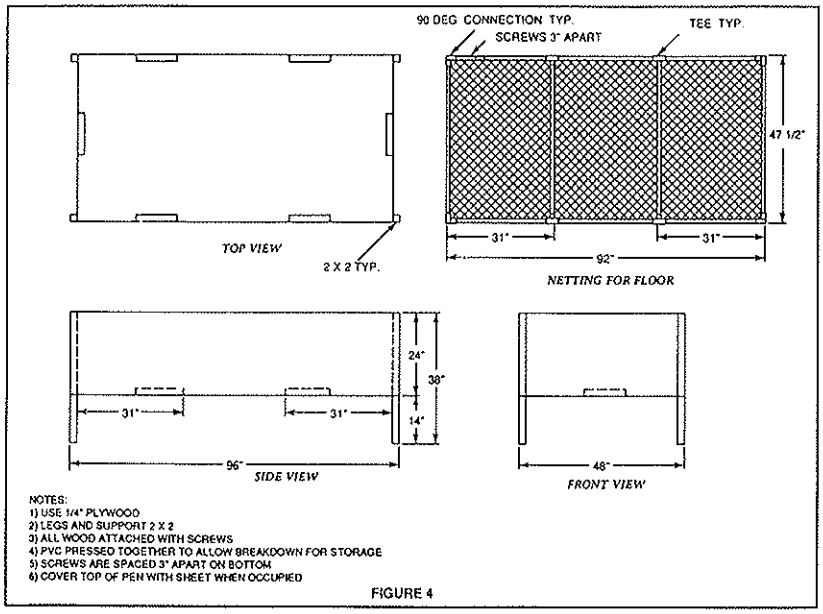


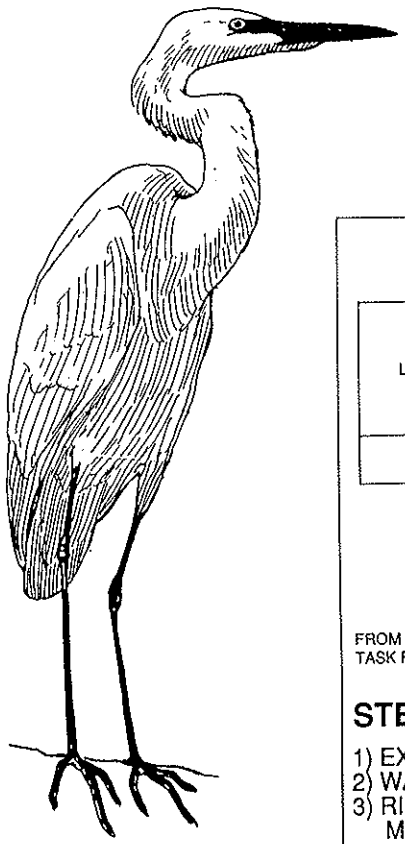
FIGURE 4

BIRD PEN

About the Authors

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Bruce McKenzie is the Manager of Planning and Development for Alaska Clean Seas and has ten years of experience in oil spill response. He has a Bachelors of Arts Degree in Resource Management from the University of Victoria.



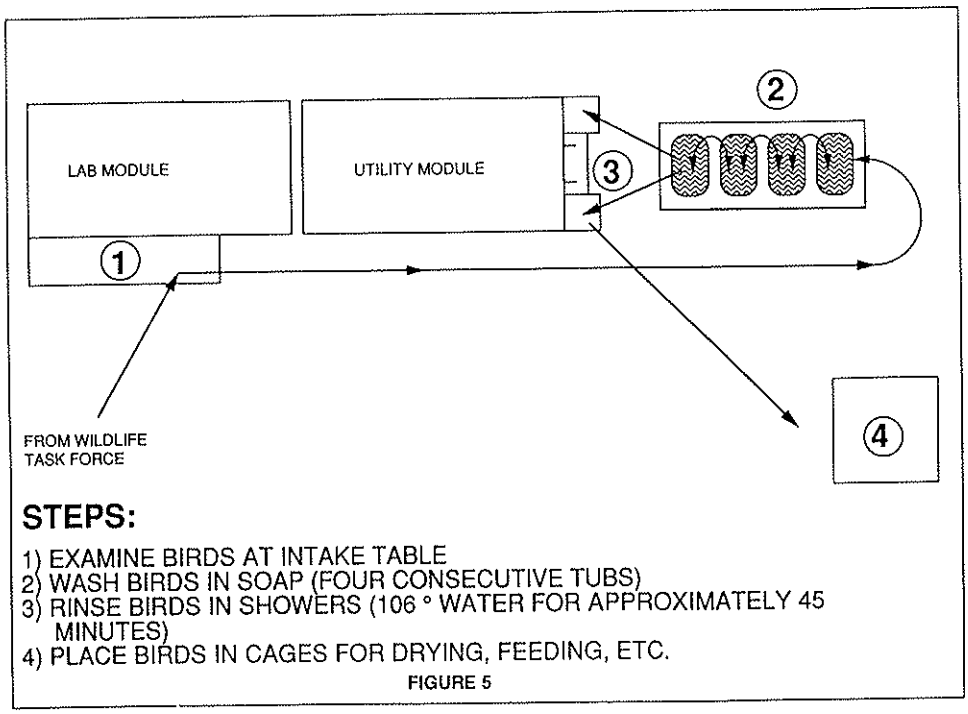


FIGURE 5

BIRD WASHING PROCESS

Book Review

Birds of Prey at the Vermont Raptor Center: Display Environments & Rehabilitation Facilities

Sarah B. Laughlin
Nancy Martin
Nancy Read
Vermont Institute of Natural Sciences
Woodstock, Vermont 05091
Price $12.00, 65 pgs.

In notebook style, this book gives a fine, well-rounded view of many aspects of captive raptor care and rehabilitation. Included are descriptions and photos of enclosures used at the Vermont Raptor Center-rehabilitation caging and hospital facilities, as well as educational display housing and the landscaping that goes with it. Care of injured and display birds is discussed at length. Included also are important and infrequently addressed areas of rehabilitation such as transportation of the injured animal, dealing with the public and the all important release criteria. Finally comes the layout of the interpretive programs offered at the Vermont Raptor Center including hints for using live birds in programs and static display techniques.

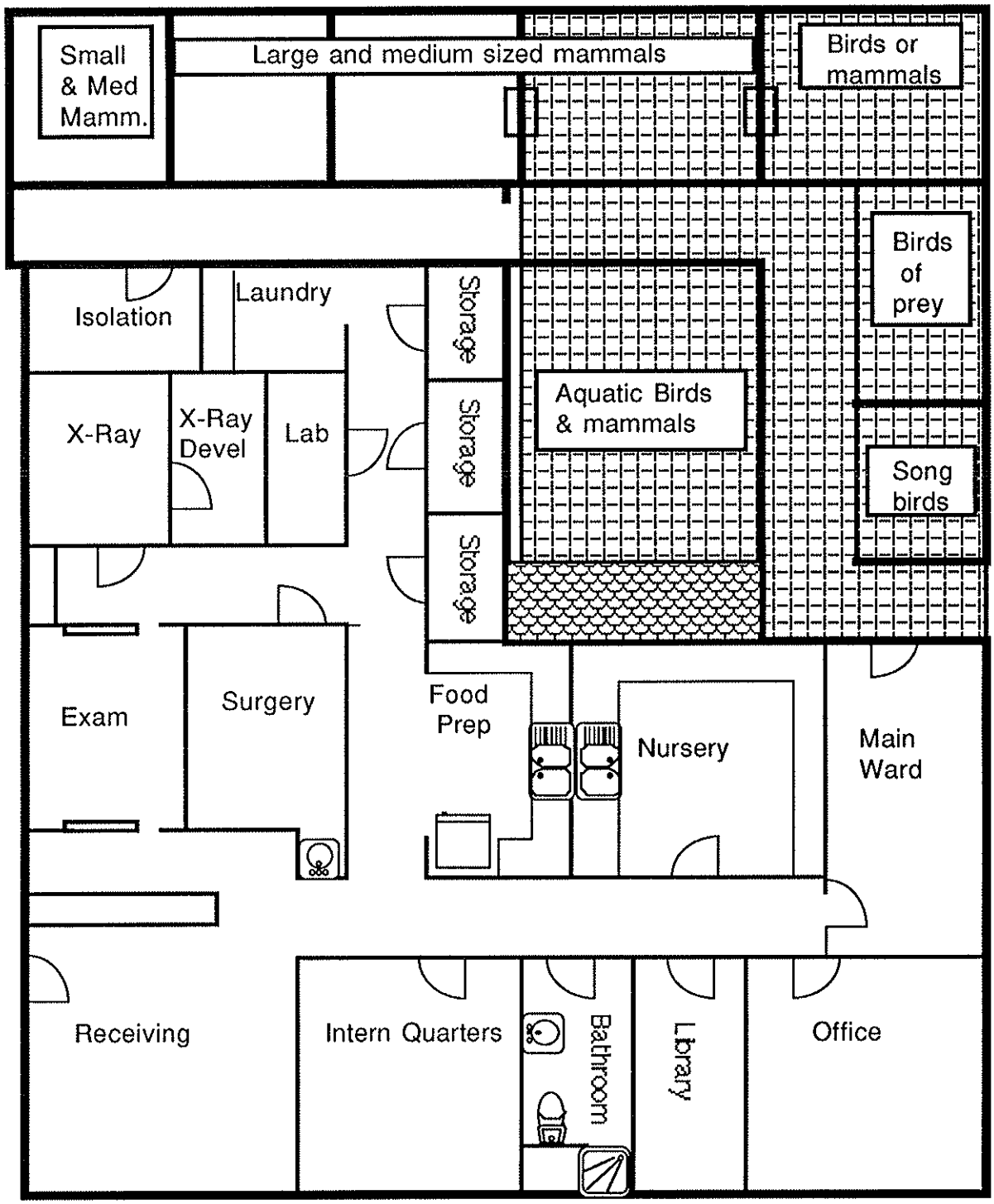
The book makes the distinction between cages and more suitable enclosures they call habitats or environments. It is refreshing to see the care and sensitivity given to this subject. Enclosures are designed around each species' particular needs and personality traits; a most important consideration when dealing with raptors. Habitats, as the term suggests, are an attempt to imitate the birds' wild state. This serves the dual purpose of allowing the public to view the birds in a natural way and of being sensitive to the psychological needs of the birds, consequently reducing stress from captivity.

The chapters on care are well presented and could stand on their own as a beginners' handbook on raptor rehabilitation. The subject is covered from the phone call that alerts the rehabilitator to a bird in distress and skillfully continues through the release of the animal. Again I am impressed with the sensitivity given to the birds' comfort and state of mind. Many "extras" are included that will be useful to the rehabilitator. These include an admission and history form, and a list of pertinent questions that need to be answered during the rehabilitation process.

The final chapter deals with the interpretive or educational programs offered at the Vermont Raptor Center. Included are "signs" to describe static display habitats and the occupants. Programs for live birds and slide presentations are covered also.

While the Vermont Raptor Center is operated by a large and professionally skilled staff, this book would be a worthwhile addition for the smallest center or care facility. We should all aspire to be as sensitive to our creatures' needs as demonstrated by these authors.

-Marge Gibson-



Howl Wildlife Center Floor Plan

See Page 6 for Article Text

The Effects of Oil on Wildlife:

Research, Rehabilitation, and General Concerns

The Proceedings from the Oil Symposium held in Herndon, Virginia on October 16-18, 1990.



Sponsored by Procter and Gamble

This is a multi-disciplinary collection of twenty-two current works that provide the reader with an up-to-date overview of oiled wildlife rehabilitation. Papers included in the text are: Oil Spills and the Environment: A Review of Chemical Fate and Biological Effects of Petroleum by Peter H. Albers, Ph.D.; A Perspective on the Effects of Oil on Birds by Lynne Frink; An Assessement of the Capability of the Legal System to Assess Damages and Recover Costs for Damages to Natural Resources From a Large Oil Spill: The Case of the Exxon Valdez by Hope Babcock, Potential Effects of Oil on Manatees by Daniel Odell; Recommendation in the Rescue, Wash and Care Techniques and Rehabilitation of Oiled Pinnipeds in California by Patty Chen-Valet, BS, Laurie Gage, DVM, and Dawn Smith, AHT; The Toxicity of Petroleum Oils to Birds: An Overview by Frederick A. Leighton, Ph.D,; Pathology of Wildlife Following a # 2 Fuel Oil Spill by Virginia Pierce, VMD, Current Treatments for Anemia in Oil-Contaminated Birds by Jan White, DVM, Notes on Health and Safety Concerns When Handling Oil Contaminated Wildlife by Sallie Welte, DVM, Hentry Bryndza, Ph. D and John Embick; Surfactant Efficacy in Removal of Petrochemicals from Feathers by Henry Bryndza Ph.D et.al; The Question of Avian Water-Repellency: Why are Some Birds More Difficult to Rehabilitate? Lynn Mahaffy; Water Hardness and Waterproofing of Oiled Birds: Lessons from the Nestucca, Exxon Valdez and the American Trader Spills by Curt Clumpner; Nutrition Support of Oil Contaminated Wildlife: Clinical Applications and Research Potentials by Susan Donoghue, VMD, MS, DipACVN; Newfoundland: Crossroads for Seabirds and Shipping in the Northwest Atlantic by John Chardine, Ph.D., The Natural History of Oil Spills, by Richard Brown, D. Phil., The Effects of Oil Pollution on Marine Bird Populations by John Piatt, Ph.D., Harry Carter, and David Nettleship; Status and Summer Distribution of Alaskan Yellow-billed Loons Following the Valdez Oil Spill by Judith McIntyre, Ph.D; Consideration in Planning Wildlife Protection Strategies in Response to Oil Spills: Alaska Experience by Pamela Bergmann; Results of the Eagle Capture, Health Assessment, and Short-term Rehabilitation Program Following the Valdez Oil Spill by Marjorie Gibson, and Jan White, DVM; Advances in Rehabilitating Oiled Sea Otters: The Valdez Experience by Randall W. Davis, Ph.D.; Evaluating the Long-term Effects of Crude Oil Exposure in Sea Otters: Laboratory and Field Observations by Terrie M. Williams, Ph.D., and Medical Treatments and Husbandry of Wild Sea Otters *(Enhydra Lutris)* During Oil Spill Rehabilitation by Pam Tuomi, DVM.

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