

# CALIFORNIA COUNCIL for WILDLIFE REHABILITATORS

Winter 2001

CCWR News

## Mission Statement

To provide an avenue for networking among California wildlife rehabilitators, and facilitate communication between wildlife rehabilitator and regulatory agencies with the focus of improving the quality of care for wildlife.

## Case Studies in Traumatic Injuries in Reptiles

By Arnold Wittstein, DVM

### Vehicular Trauma in a California Desert Tortoise

A 5.5kg, male California Desert Tortoise of undetermined age, but known to be at least thirty-five years old, was presented after he was run over by a car. The tortoise had escaped through an open gate, and the owner had backed over him in the driveway (Figure 1).

This case represents a less severe version of a condition frequently seen by rehabilitators, a CDT that is hit by a fast-moving vehicle. In this particular case, the shell was cracked, but not depressed, no shell fragments were missing, and a veterinarian saw the tortoise very shortly after the injury. This tortoise was treated



with a rapid-acting, short-lived steroid (27.5mg prednisolone sodium succinate [Solu-Delta-Cortef] IV), antibiotics (27.5mg amikacin [Amiglyde] IM), 82.5ml of a 1:1:1 mix of Lactated Ringers solution (LRS), 0.9% saline and 5% dextrose epicelomically (EC), and thorough lavage of the wound with 1:10 diluted chlorhexidine solution. The tortoise was placed in a warmed incubator overnight. The following day, EC fluids were repeated, and anesthesia was induced with 42mg tiletamine/zolazepam (Telazol) and 2.2mg butorphanol (Torbugesic) IM. The shell fragments were realigned. Human dental acrylic was prepared, and used to cover the entire injured area (Figure 2). The tortoise was allowed to recover in its incubator. It was discharged the following day with 22.7mg enrofloxacin (Baytril) to be administered orally once daily by the owner at home. After two to three years, any acrylic that had not been shed could then be removed with a

dental bur and any standard dental prophylaxis machine.

A more typical presentation is a tortoise found in the road with severe shell injuries. These tortoises have usually been in the road overnight, if not longer, and are hypothermic if found in the early morning, hyperthermic if found during midday in summer. They are often dehydrated, with severe infection, and road debris present in the wounds. In addition, severe depression of shell fragments, missing shell fragments, and internal organ and orthopedic injuries may be present. In summertime, maggots may also be found in the wounds.

Assuming this is a wild animal brought in by a good Samaritan, the first task is identifying whether the animal's injuries warrant attempts at rehabilitation, or humane euthanasia. Certain injuries

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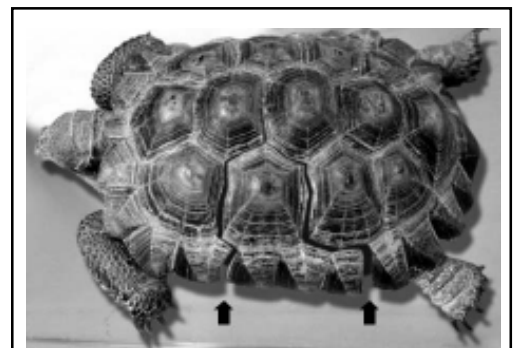


Figure 1

*Note the two cracks extending from the left-hand side of the shell towards the center.*

indicate the need for euthanasia: crushing shell injuries with fracture or displacement of the spine, obvious vital organ death, severe head injuries, loss of both front legs, loss of two legs on the same side of the body, loss of three legs, or loss of large enough areas of skin that large defects cannot be sutured closed or reattached to the shell. Assuming the tortoise is a good candidate for rehabilitation, the next step is to identify and treat the immediate, life-threatening injuries. Hypo- or hyperthermia can be identified via cloacal temperature, and appropriate measures taken to bring the animal to a more preferred temperature.

Hypothermia can be corrected with an incubator, warmed towels or blankets, hot water bottles with warm, not hot, water, or the administration of warmed epicoelomic, intracoelomic or intravenous sterile fluids (assuming that

the injuries don't preclude this, e.g. an open coelom). Hyperthermia can be treated via air-conditioning, the application of cool wet towels, cool water bottles, or the administration of room-temperature fluids. Body temperature must be continuously monitored, to prevent causing hypothermia. Please note that external palpation is not a reliable indicator of core body temperature. A tortoise found on the road at midday in the summer, and transported in a car with the air-conditioning on, will feel cool to the touch, while its core body temperature will be markedly elevated.

If the animal is not in immediate danger of dying, a small drop of blood should be obtained from a toenail clip or tail vein for analysis (more on this later).

This may not be possible in animals with low blood pressure. Concurrent with correction of body temperature, the most important thing at this point is re-establishing blood flow to vital organs with fluid supplementation. With practice, one may be able to place an intravenous catheter into the jugular vein. Realize that the jugular vein is situated much more dorsally than one expects for mammals. The procedure for tortoise IV catheter placement has been described elsewhere<sup>1</sup>. Lacking IV catheter placement, fluids can be given by bolus injection either epicoelomically

(preferred), or intracoelomically in smaller amounts. The epicoelomic route has the advantage in not risking breathing difficulties by placing fluid pressure on the lungs. Obviously, an injury that results in an exposed coelom would preclude the use of intracoelomic fluids. When

administering epicoelomic fluids, the needle is inserted just barely through the skin, in the axillary region, as close to the plastron as possible. By staying close to the plastron, and not inserting the needle very far, the needle tip stays in the space between the skin and the coelom, rather than entering the coelom. A 1:1:1 mix of LRS, 0.9% saline and 5% dextrose can be given at a dose of ten to twenty-five ml/kg every twenty-four hours, depending on dehydration. If necessary, straight LRS can be used.

Steroids are administered next, and should only be given after fluid therapy. If intravenous access has been obtained, they may be given intravenously. Otherwise, the intramuscular route will have to suffice. Steroid use is a controversial subject in veterinary medicine.

Proponents of their use feel they help combat shock, increase tissue perfusion (blood flow), stabilize injured cell membranes, and generally results in an improved outcome. Steroids are usually administered as prednisolone sodium succinate (Solu-Delta-Cortef) at 5-10 mg/kg, or dexamethasone sodium phosphate at 0.1-0.25 mg/kg. Following steroids come antibiotics. There is a wide range of choices, based on severity of the wounds, route of administration, and availability of the drugs. These may be administered for as little as three weeks, to as long as six months (see the section on bloodwork analysis below). Infection must be controlled in order to prevent abscess formation once the wounds are closed. Antibiotics commonly used include amikacin (Amiglyde) at 5 mg/kg initially, then 2.5 mg/kg every three days; late-generation cephalosporins such as cefotaxime (Claforan) at 20 mg/kg once daily (often used with amikacin) or ceftazidime (Taxidime) at 20 mg/kg every third day; enrofloxacin (Baytril) at 5 mg/kg once daily; piperacillin (Piperacil) at 100 mg/kg once daily (often used with amikacin); and trimethoprim/sulfa (Bactrim, Sulfatrim, generic) at 30 mg/kg initially, then 15 mg/kg once daily. At this point, if the animal is stable, the wound can be lavaged with warm 1:10 diluted chlorhexidine solution to remove as much of the road debris as possible. The



Figure 2  
The same CDT as in Figure 1, after stabilization and repair of the shell with dental acrylic.

**Volunteers Needed!**

CCWR could use your help. If you're interested in volunteering to help in any of the following areas, please email us at [CCWR@forsythe.stanford.edu](mailto:CCWR@forsythe.stanford.edu) or phone (707) 829-2686.

- Newsletter:
  - Writing & gathering articles
- Educational:
  - Developing & organizing classes
- Nominating:
  - Recruiting board members

wounds are then covered with gauze soaked in dilute chlorhexidine and temporary bandages applied. Flushing and bandaging of the wounds may be performed daily, while continuing antibiotics and fluids, until the wound is free of all contamination. Only then should definitive repair be made.



Definitive repair procedures vary with the severity of the injury. With minor shell damage, such as in the case described earlier, realignment of the fragments and stabilization with an acrylic may be all that is necessary. Following anesthesia, the shell fragments are realigned. In simple cases, they may stay in alignment themselves, or may require nothing more than holding them in place while the resin hardens. Repair of injuries resulting in large gaps in the shell may require wiring the fragments together, or creating a piece of “artificial shell” from fiberglass. Once the shell fragments are in alignment, the resin is prepared. A few options are available. Human dental resin works quite well, is inexpensive, and hardens quickly. Hoof acrylic, used to repair cracks in the hooves of horses, also works well, and comes with coloring agents that allow the repair to be colored to match the pattern of the shell (human dental resin is bright pink). Surfboard acrylic also works well, although it can take longer to harden, and dries white. The powdered resin is mixed with a solvent, which starts the polymerization (hardening) reaction. The less solvent used, the thicker the mixture, and the faster it hardens. Try for a mixture the consistency of molasses, so it will be thin

enough to spread evenly, yet still harden within a few minutes. The resin generates a lot of heat as it hardens, so it is imperative that none of it drips through an open area to the organs below. Serious internal burns can result. Once the resin is applied and hardened enough that it will hold the shell fragments in place, the animal may be left to recover from the anesthetic in its heated incubator.

Following recovery, antibiotics, fluids as necessary, and nutritional support are continued until the tortoise is eating well on its own. Antibiotics should be continued for a minimum of three weeks. If a pre-treatment blood sample was obtained, and it showed an increase in a type of white blood cell called a monocyte, antibiotic treatment should continue until three weeks after the monocytes return to the normal range. Monocytosis (increase in monocytes) is seen with chronic infection, and implies that the injury was long-standing. Long-term antibiotic treatment is indicated in such cases to prevent recurrence of infection and abscess formation.

Repair of vehicular injuries in desert tortoises and their return to an owner or to the wild can be one of the more enjoyable aspects of tortoise care. Many respond quite well, and go on to live normal lives. Repair of more severe injuries, such as those involving missing shell fragments or injured limbs, will be discussed in future articles.

<sup>1</sup>Mader, D. Trauma management in reptiles and amphibians. Proceedings of the North American Veterinary Conference, 10: 742-743, 1997



### Call for Educational Input

My name is Doris Metcalfe. I have been the Education Coordinator for Sonoma County Wildlife Rescue in Region 3 for the last three years. I have recently become a board member for the CCWR because of my passion and love for education. I believe that our greatest help to wildlife and the preservation of their environment comes through education.

That is why I would like to ask about your Education Programs, so that people who don't have one in place at their center could get some ideas of how to start one and what this usually entails. It might also give others more ideas for their own programs. If you already have an existing program, please send me a copy of the job description for your Education Coordinator and the description of your program itself.

I will put all of these together in a booklet and make copies available for anyone reviewing current programs or anyone who might be trying to start their own education program. You can send a large self-addressed stamped envelope if you like. Please give me about 6-8 weeks for this project to be completed. If you have any questions or suggestions please contact me at 707-665-9146 or e-mail at [scwrdoris@scwildliferescue.org](mailto:scwrdoris@scwildliferescue.org).

Thank you very much and I look forward to learning about your education programs and sharing them with others.

## Considering Homeopathy: Some Professional and Personal Comments

By Shirley Casey

Over the last few years, there has been increased focus on alternative health care for humans and the domestic animals in their care. In fact, a Harvard University study published in the *New England Journal of Medicine* said that Americans made more visits to alternative health care healers than their primary physicians in 1990. Numerous studies show that this trend seems to be continuing and even accelerating.

Various reasons are cited for this attention: desire to reduce the side effects of some allopathic medications, a search



for alternatives to invasive medical treatments, the desire to reduce high costs of medical and surgical care to name a few. Many of these holistic modalities have been shown to be quite effective. Many of them have been around for centuries and are the primary health care systems in other countries. So it should come as no surprise that wildlife rehabilitators and veterinarians are considering and using these alternative health care modalities in wildlife first aid situations. Homeopathy is one of the modalities gaining increased attention in the rehabilitation community. Homeopathy is a complementary modality in that it may be used in conjunction with some other treatments.

Three recent articles in the *Journal of Wildlife Rehabilitation* discuss holistic medicine for wildlife in more depth. The article, "Exploring the Concept of the Minimum Dose: Wildlife Rehabilitators Consider Homeopathy," in the Spring 1998 issue, describes some of the scientific foundation of homeopathy, basic principles, reasons a growing number of rehabilitators are considering it, and ways to learn more. Reprints of these articles are available in the IWRC (707-846-1761). Plus, the *NWRA Quarterly* printed an article about rehabilitators considering homeopathy in the Autumn 1999 issue.

There is also training on homeopathic first aid for wildlife available. In the last couple of years, various short programs have been presented as well as several one day sessions at NWRA and IWRC annual conferences, and two day seminars on Homeopathic First Aid and Trauma Care for Wildlife. A two day seminar conducted by a team of wildlife rehabilitators from WildAgain Wildlife Rehab and a holistic veterinarian is available for rehabilitators. It includes a description of the scientific foundation and basic principles, factors to consider in deciding if and when homeopathy might be used with wildlife, case-taking with wildlife, figuring out what remedy and potency to use, how to use important homeopathic resources, and much more. There are also other formal courses available, although they are generally oriented towards humans or domestic animals and more chronic conditions.

From a more personal perspective: WildAgain has been using homeopathy with wildlife with the help of several holistic veterinarians since 1992.

## Symposia , Seminars & Announcements

**March 13 - 17, 2001**

Lake Tahoe, NV

### Symposium 2001

NWRA annual symposium, this year entitled "Healing the Whole - Body and Spirit". Lake Tahoe Wildlife Care, Inc. will host Symposium 2001 at the Lake Tahoe Horizon Casino Resort in Stateline, NV. Contact the NWRA at (320) 259-4086, email: [nwra@cloudnet.com](mailto:nwra@cloudnet.com), for more information; or visit their website [www.nwrawildlife.org](http://www.nwrawildlife.org).

**March 31 - April 1, 2001**

Shasta College  
Redding, CA

**April 28 - 29, 2001**

Eureka, CA

### IWRC Basic Skills Seminar

The IWRC will be offering a Basic Wildlife Rehabilitation class hosted by Shasta Wildlife in March and Humboldt Wildlife Care in April. There are only a maximum of 40 spaces in the hands-on lab that accompanies these classes so get your registration in early. For more information contact the IWRC at (707) 864-1761 or via email at [iwrc@inreach.com](mailto:iwrc@inreach.com).

### IBRRC Center

The International Bird Rescue Research Center has opened a new headquarters located at the San Francisco Bay Oiled Wildlife Care & Education Center, 4369 Cordelia Rd., Fairfield. More information can be obtained from their website, [www.ibrrc.org](http://www.ibrrc.org) or by phone (707) 207-0380.

WildAgain began considering homeopathy with wildlife because of concerns about the effects of strong meds on the wildlife in rehabilitation. Sometimes the impacts of the meds seemed almost worse than the original symptoms. Other times, we wondered about the long-term effect of the meds. Then there were the stresses and risks of giving meds on a daily basis.

We started using homeopathy slowly in order to build our knowledge of how these remedies worked with wildlife (and rehabilitators know that working with wildlife can be different at times!). We found that homeopathy could be a powerful modality and highly effective with wildlife but required special knowledge and training in order to really help the animals and to avoid harm. These techniques were not quick fixes or magic. Homeopathy was often used in conjunction with heat, quiet, hydration, fracture fixation, and many “conventional” techniques rehabilitators already used. It was clear that there were times the “alternatives” might be considered, and other times when they might not be appropriate.

We started using homeopathy more frequently since it seemed very effective and easy to use with wildlife. It required extensive study and help from various vets and others as we tried to understand science, methodologies, and practices that were very different from what we have been accustomed to. We found ourselves continuing to use some allopathic treatments and significantly reducing some others, such as corticosteroids.

Using homeopathy required us to make some changes in our practices. We have to be more observant of each animal and notice minute details (e.g., Do they prefer hot or cold? What side do they sleep on? If it is respiratory difficulty, do they wheeze or rattle? If it is diar-

rhea, exactly what is the color, consistency and odor? Are they more restless than usual?). After this detailed case-taking, we had to spend even more time researching their symptoms and trying to find a remedy match using a homeopathic repertory and a materia medica. Before training, we had never heard of these absolutely critical resources. We found that we needed to get some new books and homeopathic medicines and while this wasn't cheap, neither was getting other rehab resource materials and supplies. Learning and using homeopathy was a lot like getting started in wildlife rehabilitation: more time and effort than one initially expected and rather life changing . . . but it has been very worthwhile for us and the animals in our care.

*Q. What are the results of using homeopathy often in conjunction with conventional veterinary treatment?*

Our records (and those of other rehabilitators working with us) show that wildlife seems to be recovering faster than ever before. The length of time for which animals are on meds—homeopathic or allopathic—has significantly decreased. The numbers of individuals in our care on antibiotics or corticosteroids have significantly decreased, on the order of a 90% reduction for antibiotics and we haven't had to resort to corticosteroids in 5 years. Commensurately, the cost of medicines and treatments has also decreased.

Most importantly, the numbers of successful releases have increased! Wildlife is also often being released faster and in better overall health. Less time in rehabilitation is good for the wildlife (less stress, risk, etc.) and good for rehabilitators (cheaper, less risk, more time for other activities like sleep and family, etc.). We have found many benefits in using homeopathy as a complementary modality. We also

know homeopathy is not for everyone, every animal, or every situation. It must be studied carefully to know when it might be considered, as well as how to increase the probability of help to the animal and the reduction of risks.

We urge you to learn more about this very powerful and potentially beneficial health care modality. Understand when it might be considered and when it shouldn't. Take time to read about it and attend training.



#### **Suggested Reading List:**

Dooley, *Beyond Flat Earth Medicine*  
Cummings and Ullman, *Everybody's Guide to Homeopathic Medicines*  
Morgan, *Homeopathic Medicine: First Aid and Emergency Care*  
Journal of Wildlife Rehabilitation, (Spring 1998), *Exploring the Concept of the Minimum Dose: Wildlife Rehabilitators Consider Homeopathy*  
NWRQ Quarterly, (Autumn 1999), *Considering Homeopathic First Aid for Wildlife*

Shirley Casey is president and co-founder of WildAgain Wildlife Rehab in Evergreen, Colorado. She has been rehabilitating small mammals since 1986.

She has presented often at national and state rehab training and conferences, and published on a wide range of wildlife topics.

## Surveillance for West Nile virus activity in California, 2001

By Bruce Hoar, DVM, PhD  
 Veterinary Public Health Section, California  
 Department of Health Services

West Nile virus (WNV) was first isolated from a woman from the West Nile region of Uganda in 1937. Since that time, the virus has been described in regions of Europe, Africa, the Middle East, west and central Asia, Oceania, and most recently, the United States (1999). WNV primarily circulates between mosquitoes and birds and probably only incidentally infects humans and other animals. As a result, observation of WNV activity in birds will usually precede indications of human or equine infection. This was observed in the summer of 1999, when hundreds of dead crows and numerous other dead birds were observed before 62 human cases of WNV encephalitis (including seven deaths) were identified in the New York City metropolitan area.

The summer of 2000 saw expansion in the range of WNV activity, with a total of



143 counties in 12 states and the District of Columbia having confirmed findings of WNV in a mosquito, bird, or mammal. Virus has been detected as far south as North Carolina, west as far as western Pennsylvania, and north into Vermont and New Hampshire. As was the case in 1999, virus was detected in mosquitoes and birds long before any human or equine cases were identified. For the year 2000, 22 acute human illnesses were identified, with two fatalities. There were 59 equine (23 fatalities), five other mammals (skunk, bat, rabbit, squirrel, and chipmunk), and 4,323 birds identified as infected. While American crows have

been by far the most commonly affected bird, WNV has been identified in a total of 76 avian species in the United States, including jays, gulls, and various raptor species. In most bird species infection does not cause serious illness, but the virus can be highly pathogenic with a very high mortality rate in certain species, such as crows. Although there is currently no evidence of WNV in California, the virus could be imported to California through interstate or



mosquito pools, and 216 human samples) have been tested for evidence of WNV in California. All samples have tested negative. In 2001, DHS hopes to expand testing for WNV. Given the natural cycle of the virus between mosquitoes and birds, birds provide an ideal sentinel for early detection of WNV in an area. DHS will collect information on dead birds and appropriate diagnostic tests will be performed on suitable specimens.

international transport or movement of birds, mosquitoes, or mammals. Some researchers believe the virus will reach California within 5 years.

In collaboration with the Centers for Disease Control and Prevention (CDC), the Center for Vector-borne Disease Research at the University of California, Davis (UCD) and the School of Veterinary Medicine at UCD, the California Department of Health Services (DHS) has initiated surveillance for WNV and other mosquito-borne viruses in animals and humans in California. The WNV portion of the program began in mid-2000. To date, a total of 26 birds, 16 horses, 20,327 sentinel chickens, 4405

For more information on the WNV surveillance program, please contact DHS at (916) 327-0332 or (510) 540-2356 or [arbovirus@dhs.ca.gov](mailto:arbovirus@dhs.ca.gov).

For more information about West Nile virus, refer to the following Web sites:

<http://www.nationalatlas.gov/virususa.html>

<http://www.cdc.gov/ncidod/dvbid/westnile/index.htm>

[www.ci.nyc.ny.us/health](http://www.ci.nyc.ny.us/health)

# Around The State California Fish and Game Regional News

By Charles Gailband

With this issue, we begin the inclusion of a new feature from our Membership Director, Charles Gailband. Charles will be compiling regional updates of what's happening in each of California's regions.

### Region 3 Central Coast

**Barbara Elliot, Karen Hoyt, Cathy Ortiz, Crystal Norris** were presented with the **Director's Achievement Award**. This acknowledgement from the **Director of Fish and Game** was bestowed for improving the professionalism in the rehabilitation community.

### Region 4 Southern Sierra

The Department of Fish and Game is working with the city of **Clovis**, the **Fresno Flood Control District**, and **Fresno State University** to develop a Nature Center/rehabilitation facility. This cooperative project will offer interpretive exhibits to educate people on the area's habitat and wildlife while providing a facility for rehabilitation.

### Region 5 South Coast

Local Department authorities conducted a series of meetings with area rehabilitators to review regulations and policies. Rehabilitation practices in this area have not been regulated and monitored at levels consistent with the rest of the state. Rehabilitators will be signing new MOU's soon. In addition to facilitating more consistent standards and practices, **Lieutenant Baima**, is working on procuring some equipment and grants for area rehabilitators.

Regional update information may be sent to Charles at:

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