

US Fish and Wildlife Service Guidance on the Proactive Hydration of Mojave Desert Tortoises

Effective 04/01/22 – 12/31/22

We are encouraging biologists to offer water to all Mojave desert tortoises after handling. There is no requirement that a tortoise void to be eligible. All biologists that are authorized to handle desert tortoises are allowed to offer water via the nasal-oral syringe method this year. Biologists formally trained in disinfection protocols may offer water via a shallow plastic dish (e.g., flower pot saucer, flying disc). Biologists formally trained to assign body condition scores (BSC) and to disinfect tools (e.g., range-wide monitoring or health assessment training) are encouraged to offer water to tortoises determined to be in the lowest condition group (BSC 1-3) by soaking them in water baths. For all methods, the water to be offered to tortoises should be transported in a container separate from the water that humans are drinking. Injectable epicoelomic fluid administration is reserved for use by biologists with formal training in the technique, specific inclusion as an authorized individual on a permit, and for animals that void during assessments or are otherwise approved to receive fluids (e.g., hydration in preparation for translocation).

There are no new requirements to submit data to the USFWS regarding hydration attempts. If data were previously required for specific actions (e.g., health assessments) or specific projects, those requirements remain in place.

Nasal-oral fluid administration

This procedure is easy to carry out with minimal equipment and no disinfection needs, but may not work for all tortoises.

Supplies for nasal-oral fluid administration

- Syringe (any size, no needle)
- Fresh drinking water: 40ml/kg with a minimum of 15ml regardless of body weight (Field et al. 2018)

Procedure for nasal-oral fluid administration

- Place the tortoise on the ground or have the tortoise held facing you, near to and parallel with the ground, without restraining its legs.
- Hold the water-filled syringe (no needle) facing downward just in front of the tortoise's face, very close to the nares and slowly push the plunger allowing the water to enter the nares and/or mouth.
- The tortoise will sometimes actively accept and drink the water. If the tortoise shows strong aversion, stop offering water. Do not force the tortoise to take in the water. If the tortoise

accepts water, continue to offer until the tortoise loses interest (as time allows) after the minimum volumes are met.

- Do not touch the tortoise with the syringe. Dispose of the syringe if it contacts the tortoise rather than attempting disinfection.

Water dish

Supplies for offering water in a dish

- Shallow plastic dish (e.g., flower pot saucer, flying disc)
- Fresh drinking water
- Disinfectant

Procedure for offering water in a dish

- Place water-filled dish on the ground in front of the tortoise or place the tortoise in close proximity to the dish
- The tortoise will sometimes actively approach and drink the water. If the tortoise shows no interest after several introductions to the dish or strong aversion, stop offering water. Do not force the tortoise to place its head in the dish.
- Thoroughly disinfect and rinse the dish after use. Be sure to remove organic debris prior to applying disinfectant. For more information on disinfection protocols, see Appendix A from Health Assessment Procedures for the Mojave Desert Tortoise: a handbook pertinent to translocation.

Water bath

Supplies for water bath rehydration

- Plastic tote slightly longer and wider than the tortoise
- Fresh drinking water
- Disinfectant

Procedure for water bath rehydration

- Place the tortoise in the tote and add water until it reaches the level between the skin-plastron junction and the chin.

- Allow the tortoise to soak for 30 minutes if possible. The extension to handling time is acceptable when the purpose is hydration.
- Tortoises may drink water through their nose or mouth or absorb it through their cloaca.
- Tortoises may void more urine while being soaked in an effort to eliminate urine with high solute levels to replace it with the fresh water it is taking in. If a tortoise voids in its soaking tub and additional fresh water is available, the water should be discarded and replaced with fresh water until the completion of the 30 minutes. Otherwise the tortoise can be soaked for 30 minutes in the water that contains the voided urine and urates. At the end of the soak time, rinse the tortoise with fresh water to remove urine odor on the limbs and shell, which might attract predators.
- Thoroughly disinfect and rinse the tote after use. Be sure to remove organic debris prior to applying disinfectant. For more information on disinfection protocols, see Appendix A from Health Assessment Procedures for the Mojave Desert Tortoise: a handbook pertinent to translocation.

References

Field K.J., J.D. Johnson, N. Lamberski. 2018. Nasal-oral water administration for rehydration of juvenile Mohave desert tortoises. *Journal of Fish and Wildlife Management* 9(2):591-597. doi: 10.3996/042017-JFWM-034.

U.S. Fish and Wildlife Service. 2019. Health Assessment Procedures for the Mojave Desert Tortoise (*Gopherus agassizii*): A Handbook Pertinent to Translocation. Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada.

Appendix A: Disinfection and Sanitation (*revised* March 2019)

Caution must be used whenever handling or sampling desert tortoises to ensure that pathogens (i.e., disease causing microorganisms) are not introduced to a field site through contaminated equipment or clothing items. Equally important, field personnel must take necessary precautions to ensure that they do not aid in the unintended transmission of pathogens among the individual tortoises sampled or contaminate the samples that have been collected. Therefore, development and implementation of a step-by-step disinfection protocol is essential for field studies. An effective disinfection protocol must address the microorganisms being targeted, the characteristics of the disinfectant, and the impact a disinfectant may have on the environment. The health and safety of field personnel and desert tortoises are of vital importance.

A number of products are available for disinfection/sanitation purposes. The most common antimicrobial products fall within one of the following classes: alcohols (i.e., hand gels), chlorine (i.e., bleach), iodine/iodophors (i.e., povidone, iodine), chlorhexidine (i.e., Nolvasan), hydrogen peroxide (i.e. Rescue), oxidizers (i.e., VirkonS), phenols (i.e., Lysol), quaternary ammonia (i.e., Roccal), and aldehydes (i.e., Wavicide). Each has varying effectiveness for different classes of microorganisms, and the reader is referred to the University of Nebraska - Lincoln Extension website entitled, 'Selection and Use of Disinfectants' for more information about disinfectants.¹ The effectiveness of any disinfectant or antiseptic is determined by the amount of time that the cleaning agent is allowed to contact the surface, concentration of the product used, the organic load (amount of dirt/debris), the level of microorganism contamination, the condition of the object being cleaned (cracks, crevices, wood vs. plastic surfaces), ambient temperature, and sometimes the environmental pH. In field conditions where high organic loads are almost always present, effective antiseptics and disinfection are not possible without first cleaning to remove excessive debris. Therefore, regardless of the agent used, an initial cleaning is required.

The protocol listed below describes methods to be used when working with desert tortoises. Certainly, other protocols may be developed to meet the needs of specific projects or management goals, upon approval from the U.S. Fish and Wildlife Service. Users should follow local and state regulations for transport and disposal of disinfectant solutions.

Disinfectant solutions

Solutions should be stored in dark bins or in opaque bottles and should be made fresh regularly (i.e., daily or weekly depending on storage conditions). Take care to keep all solutions off of skin and out of eyes. Gloves should be worn when using disinfectants. Appropriate choices as disinfectants include those listed below.

Rescue®

This product is sold as a broad spectrum ready to use liquid disinfectant and is effective against viruses, bacteria (including mycoplasma), fungi, and tuberculoids. Contact time for disinfection is 1 minute. This solution uses powerful surfactants (detergents) that are compatible with a wide range of materials including metal. It uses hydrogen peroxide as the active ingredient, breaking down into water and oxygen and reducing environmental impact. Note: The wipes and concentrated solution are not recommended for our purposes.

¹ Available through URL: <http://www.ianrpubs.unl.edu/epublic/live/g1410/build/g1410.pdf>

Trifectant®

This product is sold as a powder or tablet and is effective against viruses, bacteria (including mycoplasma), and fungi. It is also fairly resistant to inactivation by hard water and organic matter. Once mixed, the solution is stable for seven days. Contact time for disinfection is 5-10 minutes and metal instruments should not be soaked for more than ten minutes. A 1-2% solution should be mixed according to instructions on the packaging.

Chlorhexidine diacetate (e.g. Nolvasan®)

This disinfectant is sold as liquid and is effective against viruses, bacteria, and fungi. It should be prepared according to the instructions on the packaging.

Bleach

While no longer the preferred option, a standard bleach solution may be used (1:20 dilution of 5 percent household bleach in water). Bleach should be purchased in small bottles or dispensed into small bottles to minimize deterioration from opening/closing the lid. In the event of a high organic load, thoroughly remove or wash the organic material off before using bleach to disinfect to prevent the bleach from being inactivated. Bleach solutions are also readily inactivated by sunlight.

Note: Do not leave disinfectant solutions (e.g. Rescue®, Trifectant®) in direct warm sunlight or in hot vehicles. Please store according to manufacturer's suggestion.

Protocol for cleaning and disinfecting equipment and sanitizing personnel

All equipment must be thoroughly cleaned and disinfected prior to arriving at a field site. Additionally, all equipment and work surfaces (if not on natural ground) must be cleaned before and after handling each tortoise. Efforts should be made to first remove organic debris (i.e., dirt, feces, etc.) by rinsing the area with water, brushing debris off with paper towels, or cleaning the equipment/work surface with the chosen disinfectant solution and wiping with paper towels. The equipment should then be thoroughly moistened with disinfectant at appropriate dilution and appropriate contact time and dried or allowed to air dry. Heat and direct UV light exposure will improve the disinfection process.

Gloves are to be worn and changed between handling individual tortoises to prevent the transfer of pathogens from one tortoise to another. Additionally, wearing gloves will protect field personnel from the effects of potentially irritating disinfectants and pathogens. Contaminated gloves should be removed after handling and cleanup and prior to the disinfection process. New gloves should be used while disinfecting equipment. All items touched with contaminated gloves should be considered contaminated (e.g. pens, clipboards, clothing). Skin must also be sanitized between tortoises, if contact with a tortoise and/or its excretions occurs. Acceptable sanitizing solutions include soap and water (if available) or a hospital grade ethyl alcohol hand wash (minimum alcohol concentration of 60%). Example product: Alcare Foamed Alcohol Scrub (Steris Co.). Follow manufacturers' recommended contact times for all sanitizing products. Removal of organic debris is essential for proper sanitation; therefore, a water rinse before using the product will be more effective when hands are extremely dirty. Alcohol hand washes should be allowed to air dry while rubbing hands vigorously in order to appropriately distribute the product.

Any individual that has broken skin as a result of a needle stick should notify their supervisor. Supervisors should have appropriate protocols in place and review them with all field personnel prior to the initiation of any fieldwork.