

each day above ground. Tortoises are especially active during warm days when it is overcast or raining, when they seek water that collects in natural depressions or in depressions the tortoises dig themselves. Available drinking water is essential to tortoise survival. The diet of tortoises, which are vegetarians, includes a wide variety of herbs, grasses, cacti, and flowers. Since droughts are common in the deserts that tortoises inhabit, they rely on the erratic years of good rainfall and the ensuing growth of palatable plants.

Sexual maturity for tortoises occurs at 15-20 years of age. Breeding occurs in March and April and egg laying is from May to July. Nests are almost always located at the entrance of burrows. Clutches contain 1 to 14 eggs and a mature female may lay 0 to 3 clutches annually. The eggs are covered with soil and hatch after 80 to 130 days in August or September.

Predators are usually only a problem for young tortoises. Predation is the greatest cause of mortality for hatchlings. Eggs are eaten by Gila monsters, foxes, coyotes, snakes, and badgers. The shell of juvenile tortoises does not harden for five or more years and young tortoises may fall prey to ravens, hawks and eagles, coyotes, foxes, bobcats, badgers, skunks, and feral dogs and cats. Up to 200 young tortoise carcasses have been found under raven perches and nests. While successful predation on adults is rare; coyotes, foxes, bobcats, eagles, and feral dogs have been known to prey on tortoises. Habitat quality can affect predation in certain habitats.

## Research

There are many ongoing research projects that are addressing various aspects of tortoise management and physiology. Research is being conducted on the Upper Respiratory Disease Syndrome and on health baselines. Research will continue in 1991 on those topics and on live-stock grazing, predator-prey relationships, genetics, tortoise translocation/relocation, research protocols, and habitat restoration. The Bureau of Land Management will be actively involved in funding and participating in these research projects. This is especially true in the Las Vegas District, where the BLM is facility manager of the Desert Tortoise Conservation Center in cooperation with the Nevada Department of Wildlife and The Nature Conservancy.

## Construction Activities

When preconstruction activities such as driving off of established roads, construction layout, and flagging of the rights-of-way (ROW) occurs, a qualified biologist must accompany each work crew. Vegetation should be avoided to the extent possible to reduce impacts to the habitat. When a tortoise is sighted within the job site or near construction activities, the on site biologist must be contacted immediately.

Immediately prior to site preparation and excavation; backfill, grading, and restoration; or other construction activity; a qualified biologist must conduct a thorough survey of the job site. All burrows will be conspicuously flagged.

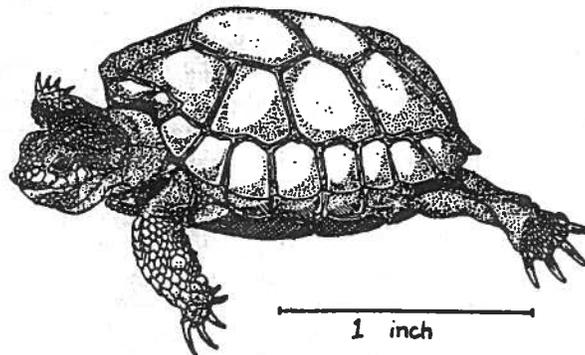
All tortoises found on the job site and associated access roads will be moved 150 to 300 feet outside the site by a qualified biologist. All activity that may harm the tortoise will cease until the tortoise has been moved. Tortoises found in the open will be placed in the shade of a shrub and tortoises removed from burrows will be placed in a similar unoccupied burrow or in an artificial burrow. Tortoises will not be placed on lands not administered by the BLM without written permission from the landowner. Tortoise handling, moving, data collection, and artificial burrow construction shall follow the procedures outlined in the Interim Techniques Handbook for Collecting and Analyzing Data on Desert Tortoise Populations and Habitats.

All vehicle traffic during construction will be confined to existing roadways and to areas that have been cleared of tortoises. Speed limits in undeveloped areas of tortoise habitat will not exceed 10 MPH from 1 March to 15 November, except in emergency situations. Vehicles within tortoise habitat must have the ground beneath them checked for tortoises before the vehicle is moved.

If a live tortoise is in danger, a construction worker may move the tortoise out of harms way using approved methods.

## Tortoise Handling

Handle all tortoises carefully and only if authorized to do so! Tortoises can be injured and can die from improper handling. Do not approach tortoises unless absolutely necessary, as your presence can induce stress in the animal. When you must approach a tortoise, move slowly and approach from the rear of the animal. Pick up the tortoise gently and keep it level at all times. When handling large tortoises, grasp the animal with both hands, one at each side of the animal. When moving tortoises longer distances, a cardboard box should be used. Boxes will be used for only one tortoise. All personnel handling tortoises will wear surgical type gloves to inhibit the transmission of diseases among tortoises. Not more than one tortoise can be handled with each pair of gloves. The Upper Respiratory Disease Syndrome is not transmissible to humans.



*Typical hatchling tortoise.*