

## ANIMALS IN SUSTAINABLE SYSTEMS

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Many people think that vegetarianism is the solution to world starvation and land degradation. It might be except for the concentration of annual plants it requires, and the resultant habitat destruction, soil loss, and energy consumption. Animals can live from a much greater variety of perennial and native or adapted plants than we can. Particularly in the high desert, one would be hard pressed to live entirely from perennial vegetarian foods. In this environment, extensive cultivation of annual grains and pulses would probably be necessary to fulfill human protein needs. This is not true of other animals.

While extensive annual cultivation is undertaken to feed grain to animals, this is not necessary to support them. Animals can live quite easily by foraging, especially in an enriched perennial system. This is one of the roles of animals: they are translators. They can translate—or convert—a wide diversity of plants and insects into meat, milk, eggs, wool, bone, manure, and more. Of course, such foraging needs to be limited to animals appropriate to the environment where they are living, and an appropriate population density.

Animals are important members of natural systems because they are the mobile elements in these systems. They can gather nutrients from widely dispersed sources and concentrate them into high quality food and fertilizer. They can disperse fertility across the landscape or gather it and concentrate it.

One continuing traditional integration of animals involves their ability to concentrate nutrients in manure. The Tarahumara of Mexico often build movable corrals of poles, stacked like Lincoln Logs®, to house their sheep and goats at night. The animals are shepherded about during the day by children and dogs; at night they are penned up in the corrals. These corrals are built in the fallow fields and are moved periodically to manure the fields. In the words of Robert Zingg:

*"In a very real sense, the Tarahumara lives on the sparse grass of the mountain side collected for him by the animals and transformed through the cycle of animal food to a fertilizer for the corn which is the staff of Tarahumara life. This is the most elaborate, delicate, and laborious adjustment of culture to natural environment in their ecology." (Dobie, et al., 1938)*

### Reference

Dobie, J. Frank, Mody C. Boatright, and Harry H. Ransom, eds. "Christmasing with the Tarahumaras", in *Coyote Wisdom*. Austin, Tex.: Texas Folklore Society Publications, no. 14, pp 207-224, 1938.