

Society for the Study of Amphibians and Reptiles

Impact of the Curio Trade for San Diego Horned Lizards (*Phrynosoma coronatum blainvillii*) in the Los Angeles Basin, California: 1885-1930

Author(s): Mark R. Jennings

Source: *Journal of Herpetology*, Vol. 21, No. 4 (Dec., 1987), pp. 356-358

Published by: Society for the Study of Amphibians and Reptiles

Stable URL: <http://www.jstor.org/stable/1563985>

Accessed: 22/05/2009 14:46

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/action/showPublisher?publisherCode=ssar>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is a not-for-profit organization founded in 1995 to build trusted digital archives for scholarship. We work with the scholarly community to preserve their work and the materials they rely upon, and to build a common research platform that promotes the discovery and use of these resources. For more information about JSTOR, please contact support@jstor.org.



Society for the Study of Amphibians and Reptiles is collaborating with JSTOR to digitize, preserve and extend access to *Journal of Herpetology*.

Journal of Herpetology, Vol. 21, No. 4, pp. 356-358, 1987
Copyright 1987 Society for the Study of Amphibians and Reptiles

**Impact of the Curio Trade for
San Diego Horned Lizards
(*Phrynosoma coronatum blainvillii*)
in the Los Angeles Basin, California:
1885-1930**

MARK R. JENNINGS, *School of Renewable Natural Resources, 210 Biological Sciences East Building, The University of Arizona, Tucson, Arizona 85721, USA. Present address: U.S. Fish and Wildlife Service, 1245 California Street, Los Banos, California 93635, USA.*

Decline of amphibian and reptile populations is a world-wide trend (Honegger, 1975, 1981; Ashton, 1976; Groombridge, 1982). Many reasons for this decline have been suggested, including habitat modification and destruction (Ashton, 1976; Groombridge, 1982), roadway mortality (Prestt et al., 1974; Bury et al., 1977), poisoning by pesticide and pollutants (Hall, 1980), introduction of new diseases and parasites (Carr et al., 1976), and competition and predation from introduced and exotic species (Moyle, 1973; Bury and Luckenbach, 1976; Wilson and Porras, 1983). However, until recently (Groombridge, 1982), human exploitation of these animals was seldom considered, exceptions including land tortoises (Townsend, 1925), sea turtles (Domantay, 1952-1953), crocodilians (Oliver, 1955), and the pet trade (Busack, 1974).

Current research has indicated the tremendous impact of human exploitation on populations of red-legged frogs (*Rana aurora*) in California during the past century (Jennings and Hayes, 1985). I here describe another example of human exploitation for the curio trade in San Diego horned lizards (*Phrynosoma coronatum blainvillii*) from the Los Angeles Basin, California, between 1885 and 1930.

The curio trade for horned lizards in southern California was clearly tied to the fortunes of one individual, William Henry Wakeley (1857-1925) who came to Pasadena, California in 1881. Wakeley studied taxidermy (Farnsworth, 1883; Carew, 1930), and exhibited specimens in his hardware store where they attracted the attention of tourists (Reid, 1895; Page, 1964). He soon realized the commercial appeal of such stuffed and dried curios over hardware, and by 1886 he was advertising for live horned lizards. An advertisement in the "Pasadena and Valley Union" of 27 August 1886 read: "Horned Toads Wanted. Boys now is your chance! W. H. Wakeley wants 1000 Horned Toads to leave at J. W. Wood's drugstore." Collectors were paid five cents for each lizard (Tower, 1902).

By the late 1880's, Wakeley's enterprise had become large enough to establish a factory with 10-20 full-time workers who turned out thousands of stuffed horned lizards and dried specimens of various invertebrates and desert plants (Reid, 1895). Virtually all of these curios were sold through Wakeley's "Natural History Store." Although Wakeley sold many types of curios, stuffed horned lizards remained his

most popular item. In 1887 he sold his store but still employed approximately 10 men full-time to collect natural history specimens throughout the Los Angeles Basin. Wakeley continued as a commercial collector until his retirement in 1917.

The mechanics of the curio trade for horned lizards were relatively simple. Individuals or hires professionals brought in suitable specimens from nearby areas. The best collecting localities were Pasadena, Monte Vista [=Sunland], and Big Tujunga (Tower, 1902). Captured lizards were killed and crudely stuffed. Although stuffed horned lizards comprised the bulk of the trade, hundreds/yr were also shipped alive by mail to eastern U.S. localities until postal officials banned shipments in the late 1890's (Holder, 1901; Tower, 1902).

Eyewitness accounts estimate that the curio trade harvested some 5000-8000 horned lizards/yr around the turn of the century (Reid, 1895; Holder, 1901; Tower, 1902). These estimates match calculations based on Wakeley's 10 man hired force of professional collectors (Reid, 1895) and an average take of 25 to 30 lizards per person per day (Tower, 1902). If collectors were only in the field for approximately 30 days, an estimate of 7500 lizards per season coincides with eyewitness accounts. Given that *P. c. blainvillii* is active primarily in the late spring (April-May) and early summer (June-July) after which most populations estivate, the collectors hired by Wakeley probably could acquire all needed specimens in a short time. Wakeley and others also bought specimens from itinerant collectors (Holder, 1901; Tower, 1902; Grinnell and Grinnell, 1907), whose numbers and take are unknown.

Based on the above information, I estimate that at least 115,000 horned lizards were harvested over a period of 45 years, mostly between 1890 and 1910 (Table 1). After 1910 there are no firsthand accounts, but stuffed horned lizards were sold in Los Angeles until the 1930's (D. L. Jennings, R. F. Jennings, pers. comm.), and there are several articles on live horned lizards purchased by tourists during this time in southern California (Schanafelt, 1927; Scheffer, 1930).

The curio trade rose sharply in the 1890's due to increased winter tourism from the annual Tournament of Roses Parade (Wood, 1917; Carew, 1930). By 1900, the horned lizard curio trade had reached its peak with as many as 8000 lizards sold in one year alone (Tower, 1902).

By 1905, horned lizards began to be noted as being scarce or absent in many areas where they were formerly abundant. Grinnell and Grinnell (1907), Bryant (1911), and Van Denburgh (1922) all noted this decline and explicitly stated that it was due to overcollecting by the curio trade. As large adult horned lizards were worth five cents apiece to collectors (including young boys), it is not surprising that horned lizards soon became scarce in many localities close to urban areas.

Compared with other species of *Phrynosoma*, *P. coronatum* may be particularly sensitive demographically because it produces only a single clutch of 6-17 eggs (average of 11-12) per year and is a late maturing species (typically two full years) (Stebbins, 1954; Howard, 1974; Pianka and Parker, 1975; Goldberg,

TABLE 1. Estimated number of horned lizards collected by the curio trade between 1885 and 1930. See text for further explanation.

Years	Number collected/ year	Totals
1885-1890	1000/year	5000
1890-1910	5000/year	100,000
1910-1930	500/year	10,000
Total for 45 years:		115,000

1983). If *P. coronatum* resembles the closely related *P. platyrhinos* of nearby desert areas (see Medica et al., 1973), then the low annual survivorship of young (26-38%) versus the relatively high annual survivorship of adults (55-75%) would probably result in the drastic depletion of local populations after only a decade of intensive collecting of adult lizards. This result appears to have happened in much of the Los Angeles Basin in the Pasadena area around the turn of the century.

As horned lizard populations declined in the Los Angeles Basin, collectors moved to outlying areas to supply the demand. Tower (1902) reported exploitation of *P. platyrhinos* from the nearby Mojave Desert, and other areas in southern California (such as San Diego) may have also provided specimens for the curio trade as they were the source of hundreds of horned lizards introduced into Hawaii (Anonymous, 1895a, b).

The horned lizard curio trade seems to have declined abruptly after 1910. The reasons for this decline probably include over-exploitation, reduced demand for stuffed curios, the retirement of Wakeley in 1917, and extensive habitat destruction related to agricultural development (Grinnell and Grinnell, 1907) and urbanization (Goldberg, 1983).

There has long been an extensive curio trade in the United States for such diverse items as live and stuffed juvenile spectacled caimans (*Caiman crocodilus*), live "American Chameleons" (*Anolis carolinensis*), and "baby turtles" (*Chrysemys* spp. and *Pseudemys* spp.) (Carr, 1952; Oliver, 1955; Schmidt and Inger, 1957; Busack, 1974; Conant, 1975; Pritchard, 1979; Groombridge, 1982; Jennings, unpubl. data). Unfortunately, little information is available regarding the negative impact of these curio trades on native reptile populations (see Groombridge, 1982). This paper provides evidence that due to their vulnerability, horned lizard populations are particularly susceptible to over-collecting. Significantly, the first law in New Mexico protecting a reptile was passed in 1941 to protect the remaining stocks of horned lizards in the Albuquerque area from the local curio trade (Anonymous, 1941) and other states such as Arizona soon followed suit (Killian, 1954; Parker, 1954). Other undocumented examples of over-collecting probably existed in similar large towns in the southwest in the twentieth century based on the comments of Scheffer (1930).

Phrynosoma c. blainvillii is currently listed as "Indeterminate" by the I.U.C.N. (Honegger, 1975;

I.U.C.N., in press), and as a species of "Special Concern" by the State of California (Jennings, 1983). Although present federal and state laws prevent further commercial exploitation of this lizard (Stewart, 1971; Collette and King, 1973; King, 1974), it is significant to note that its present status was brought about by a combination of over-collecting and habitat destruction over the past 100 years that has almost eliminated this subspecies from the Los Angeles Basin. Since viable populations of this lizard are still present in surrounding areas, it is not in danger of immediate extinction (Bury, 1972). However, continued urbanization in southern California and increased use of more remote areas that include suitable lizard habitat continue to threaten remaining populations.

Acknowledgments.—I would like to thank the many people who assisted me with this paper. Carolyn L. Garner and Cynthia C. Snyder of the Pasadena Public Library and P. H. Hardacre of the Pasadena Historical Society kindly searched for pertinent information regarding William Henry Wakeley and also provided key references. David L. Jennings and Roy F. Jennings graciously recalled some of their early experiences in the City of Los Angeles. Marc P. Hayes, John R. Hendrickson, Wade C. Sherbrooke, Robert C. Stebbins, and Glenn R. Stewart reviewed early drafts of the paper.

LITERATURE CITED

- ANONYMOUS. 1895a. Educated toads. The San Diego Union [San Diego, California]. Thursday, July 11, 1895. 40(9073):5, col. 2.
- . 1895b. Horned toads wanted. The San Diego Union [San Diego, California]. Wednesday, July 31, 1895. 40(9723):8, col. 1.
- . 1941. Horned toad protection. Christ. Sci. Monit., Monday, May 10, 1941. p. 12.
- ASHTON, R. E. 1976. Endangered and threatened amphibians and reptiles in the United States. SSAR Misc. Publ., Herp. Circ. 5:1-65.
- BRYANT, H. C. 1911. The horned lizards of California and Nevada of the genera *Phrynosoma* and *Anota*. Univ. Calif. Publ. Zool. 9:1-84.
- BURY, R. B. 1972. Status report on California's threatened amphibians and reptiles. Calif. Dept. Fish Game, Inland Fish. Admin. Rep. 72-2:1-31.
- , AND R. A. LUCKENBACH. 1976. Introduced amphibians and reptiles in California. Biol. Conserv. 10:1-14.
- , ———, AND S. D. BUSACK. 1977. Effects of offroad vehicles on vertebrates in the California desert. U.S. Fish Wildl. Ser., Wildl. Res. Rep. 8:1-23.
- BUSACK, S. D. 1974. Amphibians and reptiles imported into the United States. U.S. Fish Wildl. Ser., Wildl. Leaf. 506:1-36.
- CAREW, H. D. 1930. History of Pasadena and the San Gabriel Valley, California, Vol. 1. S. J. Clarke Publ. Co., Chicago. 546 pp.
- CARR, A. F. 1952. Handbook of Turtles: the Turtles of the United States, Canada, and Baja California. Comstock Publ. Assoc., Cornell Univ. Press, Ithaca. 542 pp.

- CARR, A. H., R. L. AMBORSKI, D. D. CULLEY, JR., AND G. F. AMBORSKI. 1976. Aerobic bacteria in the intestinal tracts of bullfrogs (*Rana catesbeiana*) maintained at low temperatures. *Herpetologica* 32: 239-244.
- COLLETTE, B. B., AND F. W. KING. 1973. Endangered wildlife. *Copeia* 1973:390-392.
- CONANT, R. 1975. A Field Guide to Reptiles and Amphibians of Eastern and Central North America (Second Edition). Houghton Mifflin Co., Boston. 429 pp.
- DOMANTAY, J. S. 1952-53. The turtle fisheries of the turtle islands. *Bull. Fish. Soc. Philippines* 3-4:3-27.
- FARNSWORTH, R. W. C. 1883. A Southern California Paradise. Privately printed by the author, Pasadena. 132 pp.
- GOLDBERG, S. 1983. Reproduction of the coast horned lizard, *Phrynosoma coronatum*, in southern California. *Southwest. Natur.* 28:478-479.
- GRINNELL, J., AND H. W. GRINNELL. 1907. Reptiles of Los Angeles County, California. Throop Polytech. Inst. Bull. 35:1-64.
- GROOMBRIDGE, B. (COMPILER). 1982. The IUCN Amphibia—Reptilia Red Data Book. Part 1: Testudines, Crocodylia, and Rhynchocephalia. I.U.C.N., Gland, Switzerland. 426 pp.
- HALL, R. J. 1980. Effects of environmental contaminants on reptiles: a review. *U.S. Fish Wildl. Ser., Spec. Sci. Rep.—Wildl.* 228:1-12.
- HOLDER, C. F. 1901. A curious means of defense. *Sci. Amer.* 85:186-187.
- HONEGGER, R. E. 1975. Red Data Book, Vol. 3—Amphibia and Reptilia. International Union for the Conservation of Nature and Natural Resources, Morges, Switzerland.
- . 1981. Threatened Amphibians and Reptiles in Europe. *Akad. Verlagsges, Weisbaden, Germany.* 158 pp.
- HOWARD, C. W. 1974. Comparative reproductive ecology of horned lizards (genus *Phrynosoma*) in southwestern United States and northern Mexico. *J. Ariz. Acad. Sci.* 9:108-116.
- I.U.C.N. *In press.* [International Union for the Conservation of Nature and Natural Resources.] Red Data Book. Vol. 3—Amphibia and Reptilia. Updated status sheet for *Phrynosoma coronatum blainvillii* Gray, 1839.
- JENNINGS, M. R. 1983. An annotated check list of the amphibians and reptiles of California. *Calif. Fish Game* 69:151-171.
- , AND M. P. HAYES. 1985. Pre-1900 overharvest of California red-legged frogs (*Rana aurora draytonii*): the inducement for bullfrog (*Rana catesbeiana*) introduction. *Herpetologica* 41:94-103.
- KILLAIN, J. L. 1954. Common Reptiles of Arizona. *Ariz. Game and Fish Dept., Phoenix.* 15 pp.
- KING, F. W. 1974. International trade and endangered species. *Inter. Zool. Yb.* 14:2-13.
- MEDICA, P. A., F. B. TURNER, AND D. D. SMITH. 1973. Effects of radiation on a fenced population of horned lizards (*Phrynosoma platyrhinos*) in southern Nevada. *J. Herpetol.* 7:79-85.
- MOYLE, P. B. 1973. Effects of introduced bullfrogs, *Rana catesbeiana*, on the native frogs of the San Joaquin Valley, California. *Copeia* 1973:18-22.
- OLIVER, J. A. 1955. The Natural History of North American Amphibians and Reptiles. D. Van Nostrand Co., Princeton. 359 pp.
- PAGE, H. M. 1964. Pasadena: Its Early Years. Lorrin L. Morrison, Los Angeles. 226 pp.
- PARKER, C. F. 1954. Arizona's original sunbathers. *Ariz. Highways* 30:24-29. [October 1954.]
- PIANKA, E. R., AND W. S. PARKER. 1975. Ecology of horned lizards: a review with special reference to *Phrynosoma platyrhinos*. *Copeia* 1975:141-162.
- PRESTI, I., A. S. COOKE, AND K. F. CORBETT. 1974. British amphibians and reptiles. In D. L. Hawksworth (ed.), *The Changing Flora and Fauna of Britain*, pp. 229-254. Academic Press, N.Y. 461 pp.
- PRITCHARD, P. C. H. 1979. Encyclopedia of Turtles. T. F. H. Publ., Neptune, New Jersey. 895 pp.
- REID, H. A. 1895. History of Pasadena. Pasadena History Co., Pasadena. 675 pp.
- SCHANAFELT, M. 1927. *Phrynosoma Mio*, the harmless horned toad of the warm sands. *Nature Mag.* 10:41-42.
- SCHAEFFER, T. H. 1930. Horned toads. *Nature Mag.* 16:116.
- SCHMIDT, K. P., AND R. F. INGER. 1957. Living Reptiles of the World. Doubleday and Co., Inc., Garden City. 287 pp.
- STEBBINS, R. C. 1954. Amphibians and Reptiles of Western North America. McGraw-Hill Book Co., N.Y. 536 pp.
- STEWART, G. R. 1971. Rare, endangered and depleted amphibians and reptiles in California. *Herpetology* 5:29-35.
- TOWER, G. H. 1902. The traffic in souvenir toads. *Sunset* 9:18-19.
- TOWNSEND, C. H. 1925. The Galapagos tortoises in their relation to the whaling industry; a study in old logbooks. *Zoologica (N.Y.)* 4:55-135.
- VAN DENBURGH, J. 1922. The reptiles of western North America. Vol. I. Lizards. *Occas. Pap. Calif. Acad. Sci.* 10:1-611.
- WILSON, L. D., AND L. PORRAS. 1983. The ecological impact of man on the south Florida herpetofauna. *Univ. Kansas Mus. Nat. Hist., Spec. Publ.* 9:1-89.
- WOOD, J. W. 1917. Pasadena, California: Historical and Personal. Publ. by the author, Pasadena. 565 pp.

Accepted: 5 August 1986.