

Larval Cestodes (*Mesocestoides* sp.) in the Liver of the Island Night Lizard, *Xantusia riversiana*

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normal. Diarrhea was first observed on day 4 PI in all six piglets, but appeared to be more severe in piglets III and VI. On days 5 through 8 PI, diarrhea was equally severe in piglets from all dosage groups. No deaths from coccidiosis occurred. The three living piglets recovered from the coccidial infections by 10 to 12 days PI and were returned to the breeding herd when they were weaned at 8 wk of age.

Mucosal smears from the mid-jejunum of the three piglets which were killed contained asexual stages, sexual stages, and oocysts characteristic of *I. suis* (Lindsay et al., 1980, op. cit.). Mild villous atrophy was observed in hematoxylin and eosin-stained tissue sections from the mid-jejunum of all three piglets examined. Mild villous atrophy was also observed in the ileum of the piglet that received 100,000 oocysts. No additional lesions were observed.

The present study demonstrates that feral piglets are susceptible to coccidiosis caused by *I. suis*, and their responses to experimental infections are similar to those of domesticated piglets. The absence of deaths and severe microscopic lesions was probably due to the low numbers of oocysts administered. Experimentally, inoculation with 400,000 oocysts of *I. suis* causes severe mortality and extensive tissue damage in nursing piglets (Stuart et al., 1980, op. cit.), whereas dosages of 3,000

to 100,000 usually do not cause mortality and result in less severe tissue damage (Robinson et al., 1983, op. cit.; Stuart et al., 1980, op. cit.).

We are unaware of any studies documenting the prevalence of coccidia from swine inhabiting Ossabaw Island. Greiner et al. (1982, J. Am. Vet. Med. Assoc. 181: 1275-1277) examined 251 free-ranging feral swine from several study areas in Florida and found 218 (87%) of the animals infected with coccidia. Oocysts of all the *Eimeria* spp. previously reported from domestic swine (Vetterling, 1966, Cornell Vet. 56: 155-166) were identified in these feral swine. Oocysts of *I. suis* were found in six (2%) of the samples. Greiner et al. (1982, op. cit.) indicated that because feral swine are trapped and sold at feeder pig sales that these animals could serve as a source of infection for domestic swine.

Coccidiosis in domesticated piglets is usually a disease resulting from the confinement of large numbers of animals. The rearing of feral swine in confinement could also produce an environment suitable for the development of neonatal coccidiosis. Coccidiosis should be considered in the differential diagnosis of neonatal diarrhea in these animals.

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The genus *Mesocestoides* is composed of cyclophyllidean cestodes which reach sexual maturity in birds and mammals

(Schmidt and Roberts, 1981, Foundations of Parasitology, Mosby, St. Louis, Missouri, 795 pp.). The first intermediate host is an invertebrate, most likely a terrestrial arthropod in which the oncosphere develops into a cysticeroid. If the arthropod is

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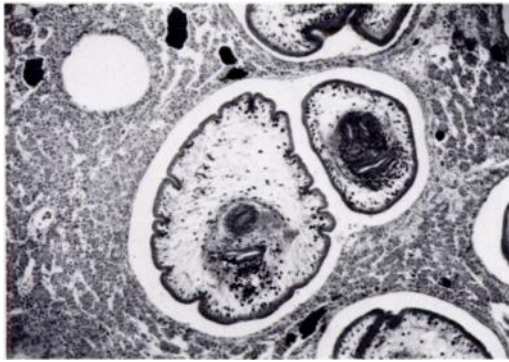


FIGURE 1. Two encapsulated *Mesocestoides* sp. tetrathyridia in an island night lizard liver; H&E, $\times 63$.

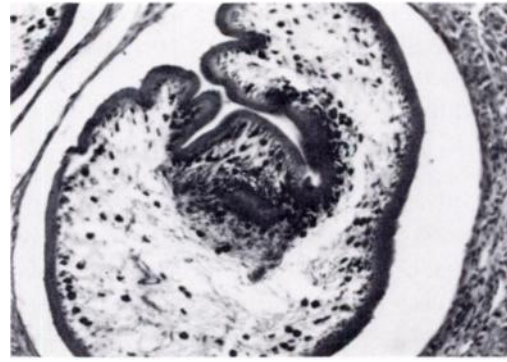


FIGURE 2. Tetrathyridium of *Mesocestoides* sp. with invaginated holdfast in an island night lizard liver; H&E $\times 160$.

eaten by a reptile, bird or mammal, the cysticeroid develops into a larva known as a tetrathyridium. This form is found in the body cavity, liver, mesentery, heart muscle or peritoneum and arrives at these sites by active migration (Webster, 1949, J. Parasitol. 35: 83–90). They have been found previously (Telford, 1964, A comparative study of endoparasitism among some southern California lizard populations, Dissertation Abstracts 25: 3175–3176) in the liver of the island night lizard (*Xantusia riversiana*). In the present report the lesions and prevalence of infection in island night lizards from San Clemente, San Nicolas and Santa Barbara Islands, California are described. The viviparous island night lizard is known only from these three California Channel Islands (Stebbins, 1966, A Field Guide to Western Reptiles and Amphibians, Houghton-Mifflin, Boston, Massachusetts, 279 pp.).

Monthly collections were made on San Clemente Island from October 1971 through September 1972. Collections are from a 6.47 km² area on the northwest end of San Clemente Island between West Cove and Wilson Cove. Collections were made from San Nicolas and Santa Barbara Island during July 1972. Specimens were deposited in the herpetology collection of

the Los Angeles County Museum of Natural History (LACM 108306–108838) and were originally collected for a reproductive study (Goldberg and Bezy, 1974, Herpetologica 30: 350–360). Two representative sectioned slides of infected livers have been deposited in the U.S. National Parasite Collection, Beltsville, Maryland 20705, USA as USNM Helm. Coll. No. 78379. Livers were embedded in paraffin, sectioned at 6 μ m and stained with Harris' hematoxylin and eosin.

Infection with tetrathyridia of *Mesocestoides* sp. was found in four adult island night lizards from San Clemente Island. Two are from males (LACM 108565, 108578) collected June 1972; two are from females (LACM 108602, 108611) collected July 1972. The parasites appeared as white nodules on the liver surface and were readily visible with the naked eye. They were also found free in the coelomic cavity and in the mesenteries. A few were seen on the intestines. Host response was minimal and was noted as a thin layer of connective tissue forming a capsule around the tetrathyridia. It was common to see two or three tetrathyridia (Fig. 1) within a single capsule in the liver. In all cases, the holdfast was invaginated (Fig. 2). Also, localized areas of inflammation were noted occasionally in the hepatic paren-

chyma. The prevalence of infection was 2% in 256 lizards examined from San Clemente Island. No infection was found in 11 adult lizards from Santa Barbara Island and 12 adults from San Nicolas Island. All infected lizards appeared to be in good health.

The definitive host of *Mesocestoides* sp. on San Clemente Island is unknown. However, as most adult North American *Mesocestoides* are found in carnivores

(Voge, 1955, North American cestodes of the genus *Mesocestoides*, Univ. Calif. Pub. Zool. 59: 125–155) the definitive host may be an island fox, *Urocyon littoralis* or a feral house cat. Voge (1955, op. cit.) reported an adult specimen of *Mesocestoides* sp. in an island fox from Santa Rosa Island, one of the other California Channel Islands.

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Leeches on Freshwater Farmed Fishes in Iraq

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Mortality among fishes was investigated in a 2,500-m² pond near Baghdad City, during July through September of 1982. Three species of fish were stocked in this pond with a total of 2,000 ranging in length from 20–35 cm. The ages of the fishes were not known. They were fed mainly a commercial diet obtained from the State Organization of Agriculture. The water source was the Tigris River which had a pH of 7.5 and dissolved oxygen 7. A worm-like parasite was found on both sides and abdomens of samples of these fishes (Table 1) and was identified as *Hemiclepsis marginata* (Müller). This

leech belongs to the family Glossiphoniidae (Duijn, 1973, Diseases of Fishes, Iliffe Books, London, England, 372 pp.). All leeches were adult stages and fishes of different sizes were infested. Sites on the skin where the parasites were attached showed inflammation and in some cases growth of the fungus *Saprolegnia*. Infested fish were restless and swam close to the water surface. Blood from one of the infested fishes was examined for blood parasites and was infected with *Trypanosoma* sp.

An attempt was made to infest carp experimentally with *Hemiclepsis marginata*. Ten fishes ranging in length from 10 to 20 cm were used. Twelve leeches were placed in a 94-liter aquarium with continuous aeration 5 hr before the fish were

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TABLE 1. Prevalence and intensity of *Hemiclepsis marginata* on some fish in Iraq.

Common name	Scientific name	Infested/examined	Intensity*	
			Mean	Range
Carp	<i>Cyprinus carpio</i> L.	4/25	5	2–8
Bunni	<i>Barbus sharpeyi</i> Gunther	5/18	6.2	1–14
Kittan	<i>B. xanthopterus</i> (Heckel)	8/20	3.6	1–10

* Number of leeches per infested fish.