

## **Leeches on Freshwater Farmed Fishes in Iraq**

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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-m<sup>2</sup> 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.

introduced. Observations were made for 2 wk. The results showed that eight out of 12 parasites attached themselves to the skin of the fish within a period of 2–7 days.

The cause of the mortality among fishes in the pond was not determined. Bacteriological examination revealed the presence of *Aeromonas hydrophila* in some of

the fish, but its role in the mortality was not determined.

This is the first record for this leech in Iraq. Voucher specimens of the leech have been deposited in the Iraqi Natural History Museum (Parasitology Section) and assigned Accession No. HIF37.

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## **An Evaluation of Burning for Control of Winter Ticks, *Dermacentor albipictus*, in Central Alberta**

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The winter tick, *Dermacentor albipictus*, is a one-host tick found on moose and other large ungulates throughout much of North America. Infestation of moose is seasonal; larvae are acquired in autumn, nymphs overwinter on the host, develop to adults in early spring, and adults engorge and drop off the host from February to May (Glines, 1983, The winter tick, *Dermacentor albipictus* (Packard, 1869): Its life history, development at constant temperatures, and physiological effects on moose, *Alces alces* L., M.Sc. Thesis, Univ. Alberta, Edmonton, Alberta, 143 pp.; Drew, 1984, Reproduction and transmission of the winter tick, *Dermacentor albipictus* (Packard), in central Alberta, M.Sc. Thesis, Univ. Alberta, Edmonton, Alberta, 220 pp.). Under field conditions in central Alberta, egg laying begins in early June and egg hatching occurs in late August and early September (Drew, 1984, op. cit.).

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Since 1977, many dead and moribund moose have been found annually in central Alberta. Most have had high numbers of *D. albipictus* and premature loss of winter hair (Samuel and Barker, 1979, Proc. N. Am. Moose Conf. Workshop 15: 303–348). Numbers of ticks per moose in this area often exceeded 50,000 (Samuel and Barker, 1979, op. cit.; Glines, 1983, op. cit.). The high numbers of ticks cause infested moose to groom and remove much of their winter hair 2–3 mo prematurely (Glines, 1983, op. cit.; Drew, 1984, op. cit.).

Other workers (Jacobson and Hurst, 1979, J. Wildl. Dis. 15: 43–47; Oldham et al., 1981, Brush Manage. and Range Improvements, Texas Agric. Exp. Stat., College Station, Texas, 152 pp.; Roberts, 1955, Fla. Entomol. 38: 17–20) have shown that prescribed burning reduces numbers of some tick species. Because of the annual problems with *D. albipictus* in central Alberta, the development of a practical program of tick management is desirable. The purpose of this study was to investigate the effects of a prescribed burn on survival and productivity of engorged female *D. albipictus*.