

RESEARCH NOTE

Effect of *Proctoeces lintoni* (Digenea) on the Fecundity of *Fissurella crassa* (Archaeogastropoda)

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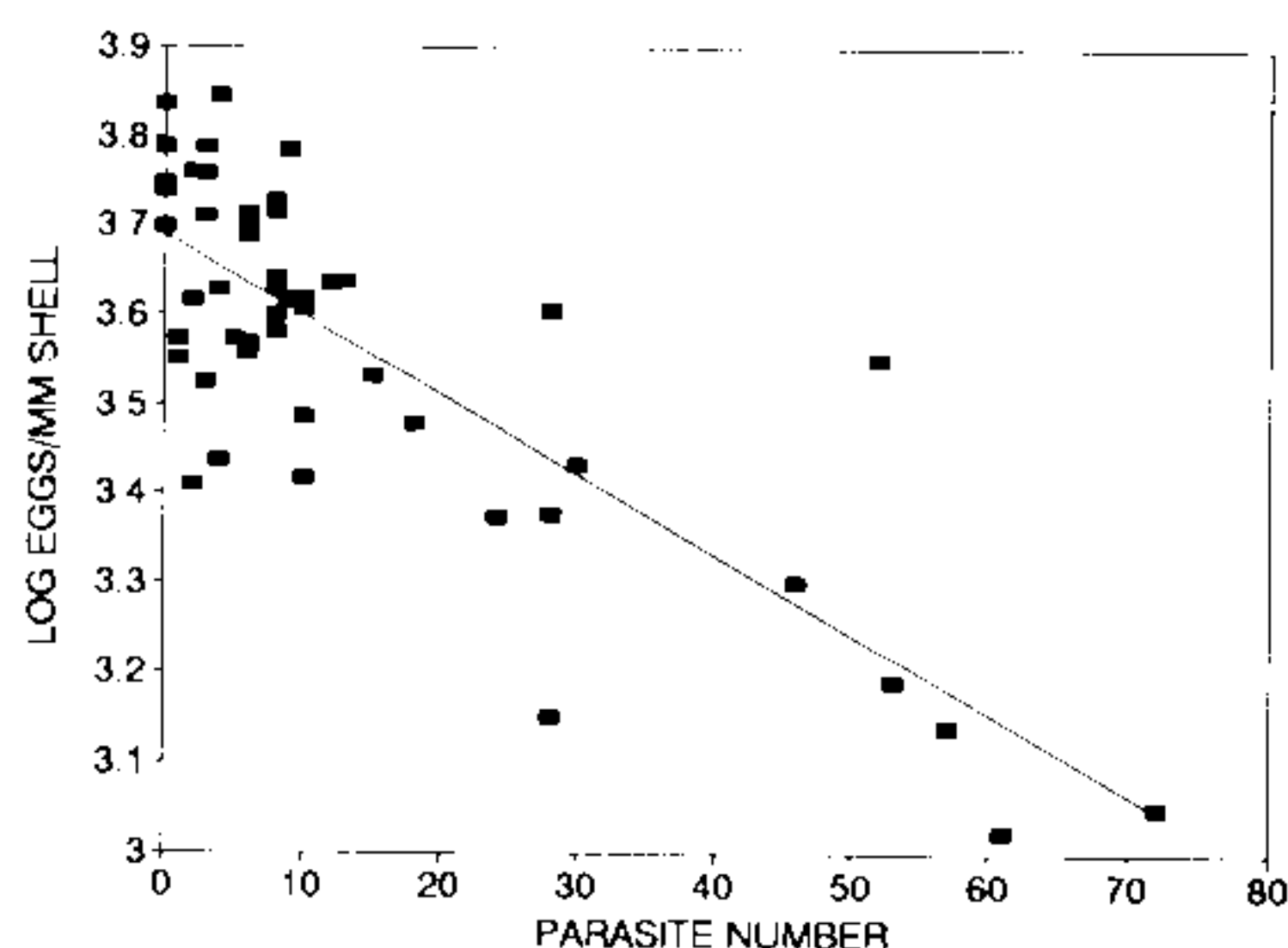
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The gonads of the key-hole limpet, *Fissurella crassa*, are greatly parasitized by the adult digenea *Proctoeces lintoni* (Fellodistomidae). High levels of prevalence and intensity of infection produce strong damage on these gonads, affecting the reproductive success of the host (M Oliva 1992 *Mem Inst Oswaldo Cruz* 87:37-42). However the quantitative impact of the parasite on the host fecundity, remains unknown. In this note, we present a first attempt to quantify such an impact.

During July-November 1991, and aperiodically, we hand collected 203 specimens of *F. crassa* from rocky shores near Antofagasta, northern Chile (23° 25'S, 70° 35'W). Key-hole limpets were carried alive to the laboratory and kept in aquaria at 20°C. Spawning of adult limpets (≥ 40 mm total length) was induced by a thermic shock (30°C) for 2 hours. Only females were considered in the analysis, because eggs are easier to count than sperm. Fifty female key-hole limpets (ranged 40-50 mm in total length) spawned; the number of eggs of each spawn was determined. Posteriorly, all female were sacrificed and the size of infrapopulation of worm in the gonads was quantified.

The number of eggs spawned per millimeter of shell was negatively and significantly correlated with parasite number ($r = -0.81$, $P < 0.001$, $df =$

48). Moreover, the Student "t" test shows that the average number of eggs spawned per millimeter of shell was significantly different between parasitized and non-parasitized key-hole limpet (3941.6 and 5812.4 respectively, "t" = 3.23, $0.002 > P > 0.001$, $df = 48$). Mean size of parasitized and non-parasitized limpet, does not differ significantly (52.8 and 53.2 mm respectively, "t" = 0.136, $P > 0.50$, $df = 48$). Ours results show that, as a consequence of the presence of *P. lintoni*, *F. crassa* has a loss of fecundity that in average, reach 32.2%. This value closely resembles those reported by D Rader (1982 *Proceedings Echinoderm International Conference*, pp 395-401 Tampa Bay. In JM Lawrence and AA Balkema (eds) Rotterdam) and A Kabat (1986 *Can J Zool* 64: 267-270), for other invertebrates infected by castrators. The impact on the fecundity produced by the presence of *P. lintoni* in key-hole limpets, undoubtedly affects the reproductive success of the infected population. Compensatory mechanisms, such as those proposed by D Minchella (1985 *Parasitol* 90: 205-216) as a response to parasitic castration, are not aparent in this host-parasite system.



Effect of the number of *Proctoeces lintoni* on the fecundity of *Fissurella crassa* (calculated as number of eggs spawned per mm of shell). $\text{Log eggs/mm shell} = 3.68 + (-0.0099 * \text{number of parasites})$ $r = -0.81$, $P < 0.001$, $df = 48$.

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