

Should Redclaw Crayfish be introduced to Fiji?

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WHENEVER a new organism comes on the aquaculture scene there is a rush to try it out and to introduce the species to new locations. Such was the case with *Pacifastacus leniusculus* in Europe in the early 1980s. In the UK there was at the time no legislation to control such introductions and commercial pressures ensured that the species was soon widely distributed throughout the UK. One consequence was the introduction of the Crayfish Plague *Aphanomyces astaci* which resulted in the destruction of large populations of the native crayfish *Austropotamobius pallipes* in several river systems. It was against this background that I came to learn of a proposal to introduce *Cherax quadricarinatus* to Fiji in 1991. The commercial proposal was put to the Department of Fisheries who were considering accepting it when, on the basis of experience with crayfish in the UK, I proposed that there should be a delay while the species was evaluated for its likely effect on the Fijian fauna.

A long delay was considered inappropriate and so it was proposed to limit the investigation to the possible impact on organisms of importance for freshwater fisheries. The two organisms selected were freshwater prawns, particularly *Macrobrachium lar*, and a freshwater clam *Batissa violacea* which forms the basis of an important fishery operated largely by indigenous Fijian women.

A quarantine stock of Redclaw was imported from a commercial source in

Queensland and tests were planned to allow a more informed evaluation of the proposal. The crayfish were stocked in tanks with prawns and although there was slow mortality of both species over 18 months no obvious disease was detected in either organism. The two species appeared to be able to co-exist in these circumstances.

In the case of the clams it was obvious that the crayfish could not harm the adults but it was necessary to check if the juveniles would be subject to predation. At this point the author, who had recently arrived in Fiji, discovered that the life cycle of the clam was not fully understood and nobody knew where or when to find juvenile clams despite the importance of the organism for the rural economy. The Fishery Department accepted the need to delay permission for introduction of Redclaw while the life-cycle of *Batissa* was further investigated. In the event it took over two years to find juveniles of less than 4 mm in length for testing. Simple aquarium tests then showed that Redclaw would consume these juveniles if they were easily available on a hard surface but they did not easily detect and consume individuals allowed to burrow in their normal substratum. The eventual recommendation to the Fisheries Department was that Redclaw would be unlikely to interfere with juvenile *Batissa* in their normal riverine habitat. However, the conservative decision was taken to prohibit introduction of Redclaw to Fiji.

Indigenous commercial and subsistence fisheries do not always have much clout when faced with proposals by articulate entrepreneurs and this was an example of a Fishery Department balancing conflicting interests. Redclaw are well suited to the conditions in Fiji and would undoubtedly thrive if managed properly. They would fill a niche in the local economy where tourist hotels would provide a ready market for a delicacy produced without the need for inputs of expensive imported food-stuffs. They would also be eaten and traded by the local population. The Fishery Department probably needs to review its decision from time to time as more information becomes available about the biology and culture of Redclaw. I cannot pretend that the evaluation was exhaustive but it did give time for the Fishery Department to consider its decision and weigh the incomplete scientific evidence against commercial considerations and to evaluate the question "Should one introduce a large, predatory invertebrate into the ecosystem of an isolated oceanic island with a meagre freshwater fauna?" In Western Samoa Redclaw have been introduced for commercial culture and, inevitably, they escaped to the wild or were released; the same would happen in Fiji.

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