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## RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

**Title:** Physical and chemical characteristics of sediments in catfish, freshwater prawn and carp ponds in Thailand

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**Date:** October 2, 2008 Publication Number: CRSP Research Report 06-A6

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**Abstract:** Sediment samples were collected from 42 catfish (*Clarias hybrid*) ponds, 40 freshwater prawn (*Macrobrachium rosenbergii*) ponds and 18 carp (*Puntius spp.*) ponds in Thailand. Regression analysis revealed that pond age (1–30 years) was not a major factor influencing the physical and chemical composition of pond sediments. Sediment depth, F+S horizon thickness and bulk density of S horizon were greater ( $P<0.05$ ) in carp ponds than in catfish and prawn ponds. This occurred because sediment was removed from catfish and prawn ponds more frequently than from carp ponds. Total carbon, organic carbon and total nitrogen concentrations were greater ( $P<0.05$ ) in carp ponds than prawn and catfish ponds. Few ponds had sediment organic carbon concentrations above 3%, and carbon:nitrogen ratio values did not differ ( $P>0.05$ ) among ponds for the three species. Total phosphorus and other sediment phosphorus fractions increased in the order prawn ponds, carp ponds and catfish ponds. Sediment sulphur concentrations also increased in the same order. There were no differences in major or minor nutrient concentrations in sediment that would influence aquacultural production. Although there were significant correlations ( $P<0.05$ ) between various sediment quality variables, no single variable or group of variables would be useful in estimating sediment quality. Pond bottom management practices used by producers in Thailand included drying of pond bottoms between crops, liming, tilling and periodic sediment removal. These practices have maintained relatively good bottom quality. They should be continued in Thailand and adopted in other places.

This abstract is excerpted from the original paper, which was published in *Aquaculture Research*, 37: 202 – 1214, 2006.

**CRSP RESEARCH REPORTS** are published as occasional papers by the Program Management Office, Aquaculture Collaborative Research Support Program, Oregon State University, 418 Snell Hall, Corvallis, Oregon 97331-1643 USA. The Aquaculture CRSP is supported by the US Agency for International Development under CRSP Grant No.: LAG-G-00-96-90015-00 and by collaborating institutions. See the website at <pdacrsp.orst.edu>.