



# Article

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## Detection of *Crocodylus mindorensis* x *Crocodylus porosus* (Crocodylidae) hybrids in a Philippine crocodile systematics analysis

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### Abstract

The Philippine crocodile (*Crocodylus mindorensis*) is considered one of the most endangered of the crocodylian species. Rumors or anecdotal concerns have existed for some time as to the possibility of hybrid individuals existing in a captive collection under consideration for providing reintroduction candidates; however, visual observations failed to identify suspected hybrids. Samples were collected from 619 Philippine crocodiles from several captive facilities and two free-ranging populations. Mitochondrial DNA D-loop (601 bp) fragments were sequenced for each crocodile and compared to 28 individuals representing ten crocodile species. Among Philippine crocodiles, 48 variable sites (47 parsimony informative sites) were identified, which defined six *C. mindorensis* haplotypes and one *C. porosus*-derived haplotype. Data were also generated for a 965 bp fragment of the ND4 subunit gene fragment for two samples of each D-loop haplotype. Among them, 91 variable sites (90 parsimony informative site) were identified, which defined three *C. mindorensis* haplotypes and one *C. porosus*-derived haplotype. From the nuclear genome, the *C-mos* gene was successfully amplified for the 388 bp partial fragment for all Philippine crocodile samples. Only two variable sites were identified. These sequences were compared to GenBank sequences for *C. porosus*. Of the 619 Philippine crocodile samples, 57 samples were found to harbor D-loop haplotypes identified as *C. porosus* and 31 of those harbored *C-mos* mutational sites diagnostic for *C. porosus* introgression. All individuals indicating *C. mindorensis* x *C. porosus* hybridization were sampled from the Palawan Wildlife Rescue and Conservation Center.

**Key words:** hybridization, mtDNA, *C-mos*, transthyretrin

### Introduction

The Philippine crocodile (*Crocodylus mindorensis* Schmidt) is an endemic, freshwater crocodylian that was once distributed throughout the Philippine archipelago (van Weerd 2010). This crocodile is poorly studied with few records before the 1980's. The limited historical records that do exist indicate that its population and distribution was higher before the urbanization and agricultural revolution in the Philippines (Weber 1945). Habitat loss, indiscriminate killing, and commercial hunting are the main reasons for its population decline in the 1970's and 1980's (van de Ven *et al.* 2009; van Weerd 2010). Long considered by the International Union for Conservation of