Fish Eating Birds Can Spread Bacterial Diseases Between Catfish Ponds

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ABSTRACT: Severe outbreaks of Motile Aeromonad Septicemia disease in commercial catfish aquaculture ponds have been associated with a virulent *Aeromonas hydrophila* strain (VAh) that is genetically distinct from less virulent strains. We demonstrated that Great Egrets (*Arde alba*), Double-crested Cormorants (*Phalacrocorax auritus),* American White Pelicans (*Pelecanus erythrorhynchos),* and Wood Storks (*Mycteria americana)* can carry and shed viable VAh after consuming fish infected with Vah.

Edwardsiella ictaluri and *E. tarda* are considered the primary species of *Edwardsiella* to cause disease outbreaks in North American catfish aquaculture. Genetic analysis has determined that most isolates designated as *E. tarda* were actually a new species, *E. piscicida*. There has been an increase in *E. piscicida* diagnostic cases in recent years possibly due to an increase in hybrid (Channel x blue) catfish production. We conducted a study to determine if Great Egrets (*Ardea alba*) shed viable *E. piscicida* when fed catfish infected with the bacteria.

Great Egrets fed infected fish shed viable *E. piscicida* bacteria for multiple days, (Table 1), after last consuming infected fish on day 2 of the study. Great Egrets in the control group did not shed the bacteria. Given that Great Egrets can shed viable *E. piscicida* after consuming diseased fish, we hypothesize that they could also serve as a reservoir for *E. piscicida* and could spread the pathogen while predating fish in catfish ponds. Additional research is needed to determine if this shedding could cause disease in these ponds.

Table 1: Examination of fecal cultures for *Edwardsiella piscicida* when fed fish inoculated with E. piscicida or control fish (non-infected) as determined by TaqMan PRC technique.

	Days Post-Inoculation									
Bird-fish	0	1	2	3	4	5	6	7	8	9
62-Infected	0	+	+	+	0	+	+	+	-	-
67-Infected	-	+	+	+	+	+	+	+	+	-
71-Infected	0	+	+	+	0	+	+	0	-	-
63-Control	-	-	-	-	-	-	-	-	-	-
64--Control	0	-	-	0	-	-	0	-	-	-
70-Control	-	0	-	-	-	-	-	-	-	-

- = No *E. piscicida* detected + = *E. piscicida* detected 0 = no growth on plate

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