Fish and Herpetofauna in the Powder and Tongue River Basin in Relation to Coalbed Natural Gas Development

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The Powder River Basin in Wyoming and Montana is currently undergoing one of the world's largest coalbed natural gas (CBNG) developments. Potential exists for substantial effects on riparian and aquatic ecosystems because CBNG development involves production and disposal of large quantities of coalbed ground water that differs from surface waters. We evaluated whether development affects fish and herpetofauna in the Powder River Basin in Montana and Wyoming. The purpose of the study was to determine if fish, amphibians, and reptiles were different in riparian areas of streams with and without CBNG development. We sampled 20 sites on eight streams in areas with development and 20 sites on eight streams in areas without development. Streams without development were deeper (t-test; $P = 0.04$), but the mean depth was only 8.4 cm deeper, which may not affect fish, amphibians and reptiles. Several fish metrics and an index of biotic integrity were used to compare fish assemblages in relation to the status of development within a drainage area. Streams in drainages with CBNG development on average had lower species richness than those without development. There were no significant differences between sites with and without

CBNG development in herpetofauna present (species richness, number of individuals, number of northern leopard frogs).