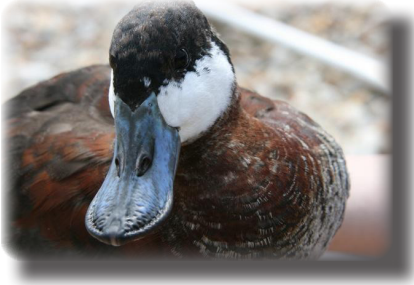


Electroreceptive Abilities of the Ruddy Duck, *Oxyura jamaicensis*



- **The Challenge:** Ruddy ducks forage primarily on aquatic insects, crustaceans, zooplankton and other invertebrates, with an emphasis on midge larvae. These ducks often dive in murky water with very low visibility, and insert their bills into the sediment to locate prey. Little is known about what sensory abilities the ruddy ducks employ to locate their food in this low visibility environment. Prey, such as midge larvae, produce small electrical fields through their movements, and ruddy ducks may have the ability to detect these potentials and use these to locate the food source, similar to other electroreceptive aquatic animals such as the platypus and sharks.



- **The Science:** Evidence for electroreceptive capabilities in ruddy ducks will be tested using several methods. Electrical fields produced by invertebrates will be simulated by a computer in the dive tanks at Patuxent Wildlife Research Center. Ruddy ducks will then be allowed to dive freely in the tanks, and preference for the location of the electrical field will be monitored by an underwater camera. If there is a preference for these small electrical fields, ruddy ducks will then be trained to respond to the location of this electrical field by pecking a target for a mealworm reward.



- **The Future:** If electroreceptive capabilities are discovered in the ruddy duck, it will be the first bird discovered to have this ability. In addition, the current expansion of alternative energy sources, such as off-shore wind farms, has the potential to disrupt the use of electroreception by aquatic animals through the production of interfering electrical fields as the energy is transported through underwater cables back to land. It is important to consider the impacts of this potential interference on animals that are relying on electroreception to forage.