The Red Knot’s Life Cycle Epitomizes the Heart of Sustainability

The red knot is a migratory bird that travels from Chile to the Arctic each year, stopping at Virginia’s barrier islands and other points along the Mid-Atlantic to feed and gain weight before continuing north. Sustainability requires — clean water and air, stable climate, ecological balance for an adequate food supply, undisturbed habitat, healthy coasts and inlands — vital natural systems that sustain all life. If the red knot population dies out, it will be a signal that much more is imperiled.

Fraser’s lifetime conservation work with eagles, piping plovers, red knots, and other birds qualified the accomplished wildlife scientist to receive a $4 million grant this year along with co-investigators Karpanty and Research Assistant Professor Dan Catlin to evaluate the effects of the Gulf of Mexico oil spill on piping plovers, another threatened species of shorebirds.

One-quarter of the world’s red knots migrate from their wintering grounds in southern Chile to their breeding grounds in the Arctic. They stop only once over at various places to rest up along the way.

A team of researchers, field technicians, and graduate students led by Professor Jim Fraser and Assistant Professor Sarah Karpanty in the college’s Department of Fish and Wildlife Conservation has been studying one piece of the puzzle — a robin-size shorebird called the red knot.

The red knot was named a candidate for Endangered Species Act protection in 2006 and is currently considered seriously imperiled. In fact, its crashing population is one of the most rapid declines of any bird species. Fraser and Karpanty’s team has been researching this migratory bird for the past five years and hopes for continued funding to find out why the knot population is spiraling downward.

One-quarter of the world’s red knots migrate from their wintering grounds in southern Chile to their breeding grounds in the Arctic. They stop only once or twice en route before reaching the barrier islands of Virginia, where they spend a few weeks in May before continuing their journey. They arrive in Virginia emaciated; on the barrier islands, they feed and rest. “They must at least double their body weight in frenzied feeding before they take off for the Arctic,” Fraser recounts. “But when it became obvious to people that this was not a good thing to do, knot conservation began as one of the earliest efforts to preserve birds.” Inadequate food supplies at Virginia’s barrier islands and the Delaware Bay, coastal development, and changing climate are factors that Fraser believes may be reducing the red knot population.

The red knots’ massive concentration at their traditional feeding areas during migration makes them vulnerable to pollution and loss of food supply. They spend more than 6 1/2 months flying between wintering and breeding grounds, so the knots’ sustainability reflects many of the same things human society is to sustain our shorebird populations” Fraser said, “but beyond that, we must develop the collective will to conserve the few remaining fragments of wild, unpolluted coastline and to restore damaged shores. It is only by combining science with the will to conserve that we can ensure that our grandchildren and their grandchildren will witness the incredible spectacle of shorebird migration and hear the songs of shorebirds nesting on our beaches.”