# RUDDY TURNSTONE - ARENARIA INTERPRES

**Taxonomy**: Kingdom: Animalia Phylum: Chordata Class: Aves Order: Charadriiformes Family: Scolopacidae Genus: Arenaria Species: A. interpres

**Habitat**:

*Biomes*: Ruddy Turnstones breed along rocky coasts and in the tundra across the High Arctic. In North America they breed in sparsely vegetated tundra near marshes, streams, and ponds. During migration they stop along coastal rocky and sandy beaches, mudflats, and shorelines of freshwater lakes to refuel. On their wintering grounds they congregate along rocky shorelines, mudflats, deltas, and sandy beaches.

**Distribution**:

*In US*: The ruddy turnstone breeds in northern latitudes, usually no more than a few kilometres from the sea. The subspecies A. i. morinella occurs in northern Alaska and in Arctic Canada as far east as Baffin Island. A. i. interpres breeds in western Alaska, Ellesmere Island, Greenland, Norway, Denmark, Sweden, Finland, Estonia and northern Russia. It formerly bred on the Baltic coast of Germany and has possibly bred in Scotland and the Faroe Islands. In the Americas, the species winters on coastlines from Washington and Massachusetts southwards to the southern tip of South America although it is scarce in southern parts of Chile and Argentina and is only an unconfirmed vagrant in the Falkland Islands. In Europe, it winters in western regions from Iceland, Norway and Denmark southwards. Only small numbers are found on Mediterranean coasts. In Africa, it is common all the way down to South Africa with good numbers on many offshore islands.

*In Other Countries*: Greenland, Europe, Scandinavia, Baltic Islands, Asia, Polynesia, Australia, New Zealant

*Holistic Description*: A shorebird that looks almost like a calico cat, the Ruddy Turnstone's orange legs and uniquely patterned black-and-white head and chest make them easy to pick out of a crowd. These long-distance migrants breed in the arctic tundra, but spend the off seasons on rocky shorelines and sandy beaches on both North American coasts (as well as South America, Eurasia, Africa, and Australia). They use their stout, slightly upturned bill to flip debris on the beach to uncover insects and small crustaceans.

*Species Richness*: 2 SUBSPECIES

*Population Dynamic*: According to the International Union for Conservation of Nature (IUCN), the ruddy turnstone population is currently very stable. Environment Canada surveys suggest that they have in fact decreased in abundance relative to the 1970s, and face a variety of threats during migration and winter. They estimate that the Canadian population is 100,000–500,000 adults. The Canadian Wildlife Service estimates that the worldwide population of ruddy turnstones is 449,000, and that 235,000 are breeding in North America while the rest are breeding throughout the Arctic regions.

**Evolution and Systematics**:

*Evolution*: No data available for this species; fossil record generally poor for modern shorebirds, including tribe Arenaria.

*Systematics*: Slight sexual dimorphism somewhat obscures racial differences, and subspecies most readily separated only by comparison of adult male in breeding plumage. Because of this, winter range and migration patterns of races poorly known.

*Number of Species*: 2 SUBSPECIES

*Number of Genera*: 2 SUBSPECIES

**Physical Characteristics**:

*Size and Length*: Length: 8.3-6.3 in (21-16 cm) Weight: 3.0-6.7 oz (84-190 g)

*Wingspan*: 19.7-22.4 in (50-57 cm)

*Coloration*: Breeding males have unique black-and-white markings on the head and throat and a chestnut and black variegated (calico catlike) pattern on the back. Breeding females are paler than males. Nonbreeding adults have brown ghosting of the breeding plumage pattern. Juveniles look similar to nonbreeding birds, but have rusty edges to the feathers. All Ruddy Turnstones have orange legs, but they are brighter during the breeding season. In flight, Ruddy Turnstones show a unique color pattern: white stripe down the back, black tail stripe, white rump, and white stripe down the wings.

*General Body Features*: The Ruddy Turnstone is a short, stocky, and oval-shaped shorebird. They have a stout and slightly upturned bill.

*Special Features of the Body*: Shorebirds are designed, or adapted, to survive in open habitats. Their brown, rust, black, and white plumage makes them less conspicuous to predators. Their bi-coloration, dark on the back and lighter on the belly, further camouflages them from predators. Their light bellies blend in against the light sky when seen from below. When observed from above, by a falcon for example, their dark backs blend in with the beach or mudflat below.

*Special Features of the Head and Sensory Organs*: Plovers are visual feeders and have large eyes so they can see their prey. Their bills are highly adapted tools for finding food. Some species will probe for invertebrates in mud or water, poking their

bills up and down in rapid succession like a sewing machine until they feel something to eat. Others have bills perfectly adapted to swishing through the water to filter food from the water column.
*Dentition*: BEAK/LAMELLAE/GIZZARD
*Special Features of the Limbs and Digits*: Shorebirds have long legs for wading. Their long toes give them the stability they need for their seemingly endless walking and running along the water's edge and in soft mud.
*Any Special Internal Anatomy*: Not only used for finding food, bills are used for preening as well. A special oil gland located at the base of their tails helps to keep their feathers dry. The birds spread the oil from this gland with their bills or the backs of their heads when preening themselves. The oil repels water from the feathers, keeping them warm and dry.
*Sexual Dimorphisms*: Adult male and female usually distinguishable in Alternate plumage, male with pronounced black and white separate streaks along crown, whitish nape, brighter upperparts, and no flecking on breast patch; female crown more mottled with extensive streaking and brownish nape, duller upperparts overall.
*Differences Between Juvenile Stage and Adult*: Immatures similar to Basic-plumaged adult, with browner upperparts and paler head.
**Behavior**:
*Diurnal, Nocturnal, or Crepuscular*: Diurnal
*Activity*: Ruddy Turnstones strut along beaches and rocky shorelines stopping occasionally to flip rocks, seaweed, or other debris with their stout slightly upturned bill to look for insects and small crustaceans hidden beneath. They are strong fliers and speed past making sharp turns like many other shorebirds. Pairs are monogamous and territorial on the breeding grounds, often returning to the same area to mate with the same individual year after year. Upon arrival they face each other with ruffled feathers while calling and spreading their tails. After the initial face off, the male flies with slow and steady wingbeats around the territory and lands with head pushed forward, back feathers ruffled, and tail spread. After the display he follows the female everywhere, rarely standing more than 30 feet from her. Soon after, they begin looking for a place to nest. Most females lay eggs within 7 days of their arrival on the breeding grounds. In order to do this, they need to eat as much as they can as soon as they arrive. The female does most of the incubating while the male stands guard nearby, incubating on occasion. After the chicks hatch, territorial boundaries break down and families move to areas with abundant insects. Eggs and young are vulnerable to predation by Long-tailed and Parasitic jaegers, Glaucous Gulls, and foxes. When parents sense an approaching predator the male flies at the intruder while alarm calling. Upon hearing the alarm calls the female walks away from the nest to mislead the predator, and takes flight once she is far enough away from the nest. Like other shorebirds, turnstones migrate in stages. The first to leave the breeding grounds are birds that did not successfully breed, followed by females, males, and finally juvenile birds hatched that year. During migration they congregate in large groups and fly in unison to feed along rocky coasts, estuaries, rocky beaches, and sandy beaches.
*Locomotion*: Short and stout orange legs, with small hind toe and no webbing between bases of anterior toes, which have flattened, somewhat spiny, cushioned undersurfaces and short, sharply curved toenails, extremely efficient for walking, running, pushing, digging, climbing, and perching. Active runners on rocks or shore; toes often used for balance and leverage when prying and probing for food items in rock cracks, fissures, and depressions in stony and sandy beaches, seaweed and mudflats, and dry soils; also essential in habit of overturning stones or shells. Swift and strong fliers on long, narrow, and pointed wings designed for fast flight. Movement variable, from rapid, erratic aerial chasing to light, graceful, and buoyant display flights.
*Communication and Perception*: Ruddy Turnstones are noisy and vocal shorebirds, and the male calls more frequently than the female. The most frequent call is a staccato chuckle or rattle which they give year-round in feeding groups, on the breeding grounds, and in flight. Alarm calls are sharp, metallic notes repeated irregularly either from the ground or in flight. The male also gives a longer chattering alarm call.
*Home Range*: Territory established by males soon after arrival once breeding areas free of snow—usually late May or early Jun. Normally sexes arrive together in mixed flocks, with pair formation occurring either before or after arrival, mostly on territory immediately following dispersal to inland breeding locations, sometimes earlier along the coast in small "courting" groups. Territories concentrated close to food-rich areas, sites sufficient to meet energy requirements of adults during incubation and chicks after hatching. Sizes of individual territories vary with habitat and food availability, almost always above a minimum necessary to avoid easy nest detection by predators, mainly foxes and jaegers.
*Degree of Sociality*: Highly gregarious outside breeding season, forming small (10s) to larger foraging and roosting flocks, especially at certain times and locations during spring and fall migration (5,000–10,000), sometimes mixed with other shorebird species.
*Level of Aggression*: Actual fighting rare; occurs only when more ritualized forms of defense fail; but can be long and severe between neighboring males, particularly during territorial establishment. After settlement and laying, aggression toward

neighbors much reduced, likely due to individual recognition; retained at high levels toward strangers. Normally male charges in Impression-Creating Posture, vigorously jabbing intruder with its bill, often pressing with breast in upright position and beating wings to maintain balance, sometimes striking out with feet; encounter usually ends in a pursuit flight. At high breeding densities, unusually high and continuous levels of aggression (i.e., territorial fighting) can occur through incubation period, resulting in reduced egg attentiveness and high egg loss by predation from other turnstones.
*Migration*: Long-distance migrant. In North America, Ruddy Turnstones migrate to western Europe, southeast Asia, Australia, South America, and the west and east coasts of North America. Some birds travel more than 6,500 miles between breeding and nonbreeding grounds.

**Predators**:

*Predators*: Long-tailed Jaeger, Parasitic Jaeger, Glaucous Gulls, Foxes, Common Ravens, Raptors, Sparrow Hawks, Peregrine Falcons, Merlins, and Owls.
*Anti-Predator Defenses*: Guarding and predator detection by nonincubating bird of pair (from vantage point such as top of large stone or rock), usually male, provides highly efficient warning device. Upon detection, flies and rushes intruder, sounding loud alarm cries at considerable distance from nest, often 400–600 m, sometimes more. Call intensity varies with predator type and nearness to nest. Alarm cry prompts incubating bird to leave nest inconspicuously by walking (never flying) at least 10–15 m away, then flying low over ground another 100–200 m away, then, if necessary (determined by distance potential predator from nest), joining mate to scold intruder. Distraction displays occur, but less common than most shorebirds. In presence of young, adult sounds alarm call, chicks freeze (remain motionless), then adult approaches intruder, lowers and spreads tail, droops wings, flaps while crying incessantly in position, and leads potential predator away from location of young. Similar display and behaviors given by adults even after chicks fledged and in flocks comprising mostly fledglings.

**Diet and Nutrition**:

*Adult Diet*: Ruddy Turnstones feed primarily on adult and larval flies and midges during the breeding season. They uncover their prey by flipping over rocks, pebbles, shells, or seaweed with their stout, slightly upturned bills. They also eat spiders, beetles, bees, and wasps. During the nonbreeding season they have a more diverse diet, eating everything from small crustaceans, to mollusks, to bird eggs. If they come across an unattended gull or tern nest they readily break open the eggs and eat the contents. They also pick at dead fish and mammals that wash up on the shores in early summer when insects have yet to emerge.
*Juvenile Diet*: DIPTERAN INSECTS (LAKE FLY ADULTS AND LARVAE)
*Special Adaptations for Getting Prey*: Efficient and aggressive predator, using distinctive feeding methods and techniques that vary with habitat, season, and abundance of food. Probes and digs using bill, overturns objects such as stones, mollusk shells, and seaweed with rapid jerks of head, to reveal prey, which are then quickly jabbed or pecked and eaten. Capable of moving large items and heavy mats of seaweed by head and bill movements, sometimes supplemented by vigorous body-pushing. Searches diligently for prey in cracks between rocks along shore and tide lines, even on ice-covered ponds, once insects begin to emerge. Also probes and thrusts bill in mud and sand.

**Reproduction**:

*Mode of Reproduction*: Monogamous
*Mating System*: Apparently monogamous and territorial.
*Mating Season*: May to June
*Courtship*: Ground and aerial displays. Aggression between male and female intense early after arrival. On ground, initiated by either sex, by rapid forward movement driving other bird off, or face-to-face confrontation: crouched position with head lowered, neck withdrawn and shortened, feathers ruffled, tail spread and lowered up to 45° with vigorous vibrating, accompanied by continuous calling. Essentially identical to Impression-Creating Posture of territorial male confronting intruder. Jabbing attack with bill may follow, but normally curtailed by submissive behavior or movement away by female.
*Territoriality*: Mostly on breeding grounds before onset of incubation, after which boundaries largely defined and respected except for neighbors flying over territory to communal feeding areas or occasional intrusion by nonterritorial failed breeder. Most encounters during settlement and pair formation. Male responsible for territorial defense from before egg-laying to late incubation; female participates weakly in scolding and chasing early, but defense of territory shared by both sexes by late incubation and hatching. Aggression displayed by territorial males in response to visual and auditory signals in a series of ordered events seldom all seen in a single interaction.
*Mating*: Copulation takes place most often after excitement-inducing act such as nest-scraping, territorial encounter, Courtship Pursuit Flight, or external disturbance, sometimes initiated by direct solicitation of female. Normally male lands by female, stretches wings upward, mounts back of female for 10–30 s, balancing with fluttering wings, sometimes clasping

nape-feathers with bill, followed by lateral movement of spread fanlike tail to establish cloacal contact, which lasts 2–8 s. Female passive throughout with folded tail. Once male dismounts, both birds begin to preen or resume previous activities.
*Nesting*: Male and female Ruddy Turnstones explore potential nest sites within the male's territory. Both make small scrapes in the ground with their bodies, but the female chooses the nesting location. Once she finds a spot, she makes a scrape, typically at the edge of tundra vegetation near a wet area and out of the wind. At other times she makes a scrape on bare gravel or in sand barrens. The female makes a scrape in the ground by twisting her body to and fro to form a small depression. She collects small pieces of the surrounding vegetation such as lichens or willows to line the bottom of the depression.
*Egg-Laying*: Clutch Size: 2-5 eggs Egg Length: 1.4-1.8 in (3.5-4.6 cm) Egg Width: 1.0-1.2 in (2.5-3 cm) Incubation Period: 21-24 days Egg Description: Olive-green or buff speckled with brown.
*Hatching and Incubation/Gestation*: Chicks hatch covered in down and are precocial, or capable of leaving the nest within a few hours. Chicks precocial and nidifugous (downy), mobile and walking within hours after hatching, able to peck at objects while looking for insect food.
*Development*: ^^^^^
*Parental Care*: Chicks mobile and pecking at objects near nest within hours after hatching. Family group normally deserts nest site within 24 h once last egg hatched. Prior to abandonment, chicks may leave nest for short periods, returning to be brooded by adults. During this period, chicks brooded mainly in nest scrape. After departure, likely brooded regularly for first week by both parents, decreasing substantially during second week. Movement by 1- to 2-d-old young with parents can be rapid. Young self-feeding. Parents guard rigorously, leading chicks to food-rich habitats—usually wet areas where recently emerged small and soft-bodied dipteran insects, mostly chironomids, occur at high densities. Family movements over tundra coordinated mostly by male parent in relationship to timing of insect emergence and availability of food for the young. Chicks not fed by parents, although adult foraging behavior likely important to identification of prey.
*Lifespan*: Around 9 years of age.
**Conservation**:
*Official Federal Status*: Least Concern
*Special Statuses in Individual States*: NONE
*Threats*: Ruddy Turnstones are common and widespread, but their remote breeding grounds make it hard to estimate population trends, especially since numbers tend to fluctuate naturally from year to year. The North American breeding population was estimated at 267,000 in 1999; in 2006 it was 8% lower, at 245,000. A separate study estimated a 77% decline in the number of birds detected at Delaware Bay between 1988 and 2007. It has been reported that counts on the coast of North America declined substantially between the 1980s and 2011, indicating that the population size could be lower than the 2006 estimate. Ruddy Turnstones rate an 11 out of 20 on the Continental Concern Score and are not on the 2016 State of North America's Birds Watch List. However, they are listed as a species of high conservation concern by both the Western Hemisphere Shorebird Reserve Network and the U.S. Shorebird Conservation Plan. Threats to turnstones include habitat loss along their migratory pathways and on their nonbreeding winter grounds, changes to their food resources, and plastic pollution. Coastal areas are prime sites for development, but beach development can eliminate or reduce wintering and stopover habitat. Turnstones and other shorebirds also rely on key places to refuel during migration. Delaware Bay is one of those critical stopover sites. Migrating shorebirds refuel on horseshoe crab eggs that are laid on the beaches in Delaware Bay in the spring. Overfishing of horseshoe crabs for bait has decreased the number of eggs available for shorebirds, which can affect their ability to arrive on the breeding grounds well fed and ready to breed. Stricter regulations on horseshoe crab harvest have been put in place in many regions and populations are now stable in the Delaware Bay region, but in the New York and New England areas horseshoe crab populations are still declining. Plastic pollution can also impact shorebirds as they mistake tiny bits of plastic for food. Once ingested, plastic often gets stuck in their digestive system and can result in death. Consider helping out on a beach cleanup near you or the next time you visit the beach, bring a bag and pick up a bit of trash. Reducing the amount of plastic you use can also help reduce the amount of plastic waste that can make its way to ocean shores.
*Conservation Efforts*: ^^^^^^
**Extra Facts**:

1. For shorebirds like the Ruddy Turnstone, getting fat is critical. Unlike humans, which use carbohydrates as fuel, birds use fat to power their migrations. Birds that don't get fat enough before they depart often leave later and some may not even make it to the breeding or wintering grounds.

2. Walking on wet and slippery rocks can be treacherous for just about anyone without good gripping shoes. Ruddy Turnstones have special feet that are somewhat spiny, with short, sharply curved toenails that help them hold on. They also have a low center of gravity thanks to their short legs that helps keep them anchored.
3. Young turnstones need to grow up and learn to fly quickly. They take their first flight when they are around 19 days old and fly thousands of miles to the nonbreeding grounds 2 days later. To make things harder, their parents will have departed by this time, leaving the youngsters to make their first migration on their own.
4. There are about 350 species of shorebirds (order Charadriiformes) in the world, but there are only 2 turnstones, the Ruddy Turnstone and the Black Turnstone, both of which occur in North America.
5. Ruddy Turnstones need to fly fast to cover the enormous distances between their breeding and nonbreeding grounds. Flight speeds of turnstones average between 27 and 47 miles per hour.
6. In 1758, Linnaeus described the Ruddy Turnstone based on a specimen collected in Gotland, Sweden.
7. Ruddy Turnstones breeding in western Alaska and eastern Siberia are world travelers: they take different migratory routes depending on the season. In spring they head north overland through Asia from wintering areas in the North and South Pacific and Australia. In fall they head south via the Pribilof and Aleutian Islands in the Bering Sea, flying mostly over the open Pacific Ocean before reaching their southern hemisphere wintering grounds.
8. The oldest recorded Ruddy Turnstone was a male, and at least 16 years, 11 months old, when he was recaptured and rereleased during banding operations in New Jersey in 2012. He had been banded in Delaware in 2001.

**Notable Species**:

1. A. i. Interpres - Circumpolar breeding range from Canada, Greenland, and Eurasia to Alaska.
2. A. i. Morinella - Breeds from Alaska east through southern islands of Canadian Arctic Archipelago to Queen Elizabeth Island.