Conservation Status Report

Red-tailed Hawk

Scientific Name: *Buteo jamaicensis*

French Name: *Buse á Queue Rousse*

Spanish Name: *Gavilán Colirrojo, Aguililla Colirrojo, Aguililla Parda*

Body length: Female: 50-65 cm Male: 45-56 cm

Wingspan: 110-141 cm

Mass: Female: 900-1460 g Male: 690-1300g

Breeding Range (words in italics are defined in the glossary):

From central and southeastern Alaska eastward to north central Yukon, northern Saskatchewan and Manitoba, central Ontario, southern Quebec and Labrador. Southward throughout contiguous United States and into northern and central Mexico, northern Bahamas, Greater Antilles and northern Lesser Antilles and on Tres Marias and Socorro islands. South from Mexico through montane regions of Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama.

Winter Range: Mostly the same areas as breeding, but most birds migrate southward out of breeding range in Alaska, Canada, and northern portions of Washington, Idaho, Montana, Wyoming, North Dakota, and South Dakota. Also winters in Central American lowlands.

Type of Migrant: Partial

Nest Type: Well-formed, large stick nest in a fork of the main trunk of a dominant tree, where a primary branch meets the trunk, or in the crown of the tree. Also nests on telephone poles and electrical transmission towers, in Saguaro cactus, on cliff ledges, and, in urban settings, ledges of buildings.

Food Habits: Preys primarily on small to medium-sized mammals, birds, amphibians, reptiles and invertebrates. Will eat carrion on occasion.

Primary Flight Mode: Soaring and gliding on broad, flat wings

ECOLOGY

This large, adaptable *Buteo* is associated with open areas interspersed with woodlots and patches of forest. Primarily a sit-and-wait predator, it often perches conspicuously near fields and roadways. This habit, in combination with its widespread distribution, makes it one of North America's most familiar and frequently observed raptors. Notable field marks include a stout body, broad wings, and reddish tail in most adults (Harlan's subspecies is an exception). From below, dark "patagial bands" can be seen on the leading edge of the wings. Plumage coloration and patterns are highly variable across North America, and individuals range from very pale to nearly black. In addition to individual variability, there are distinctive variants in different regions of the continent, and numerous subspecies are recognized.

The species nests primarily in forests or patches of trees that are closely associated with fields or other open areas. Large expanses dense forest and treeless, open areas are generally avoided (Puerto Rico is a notable exception – where Red-tailed

Hawks are associated with dense-canopied forest). The nest typically is located in the canopy of a dominant tree or on a sub-canopy limb with unobstructed access. Nests are placed in locations that allow a commanding view of the surrounding area. Individuals in western populations often locate nests on top of clumps of mistletoe or witch's broom. Red-tailed Hawk nests usually are about 70-80 cm in diameter, composed of large twigs and small branches from available trees, and lined with shreds of bark, fresh sprigs, and other plant material. Nests are often re-used over several breeding seasons, with new nest material added each year.

Red-tailed Hawks hunt primarily from conspicuous perches near openings but occasionally course low over the ground, and also hunt by "kiting" or using a headwind to remain stationary in the air above a hunting spot. Habitat use, especially in winter, is heavily influenced by the distribution of perch sites in relation to high prey availability. Red-tails typically tolerate moderate to high levels of human activity in preferred foraging areas. Suburban and rural/agricultural areas support high densities of Red-tailed Hawks where natural or human-made perch sites are plentiful near open and semi open foraging areas with plentiful prey. Known prey includes a wide array of mammals, birds, amphibians, and insects. Diet studies indicate that Red-tailed Hawks are opportunistic predators, and pursue the largest prey that is abundant and vulnerable. Small to medium-sized mammals, such as jackrabbits, cottontail rabbits, muskrats, and squirrels, are common prey items, as are smaller rodents including voles, mice, and rats. Snakes are also common prey items, particularly in western North America, and a variety of birds, including pheasants, quail, and medium-sized passerines also are taken. Despite their

large size, Red-tailed Hawks also capture large insects, and are frequently observed doing so on migration.

The Red-tailed Hawk is a *partial migrant*. In most years, most individuals from the breeding range north of the U.S.-Canada border migrate south in the fall. Many individuals from more southerly breeding areas also migrate southward, and they are replaced for the winter by migrants from the north. Additionally, some populations exhibit *leap-frog migration*. Recaptures of banded birds and satellite tracking has also revealed that young birds born in the southern California / northern Baja California region often disperse significant distances to the northeast (e.g., Nevada, Montana, Wyoming) during their first fall before returning south (possibly more than a year later) to take up largely permanent residency near their natal ranges (P. Bloom and HWI unpubl. data). Furthermore, satellite tracking of adult birds captured at western migration sites from Washington to New Mexico indicates that most migratory adults show high fidelity to specific migration routes and winter and summer ranges (HWI unpubl. data, see www.hawkwatch.org).

POPULATION STATUS

A majority (89%) of the global population of this species can be found in North America, with an estimated 1,960,000 nesting individuals (Appendix B, Table 1). Data from *raptor migration counts*, *Breeding Bird Surveys (BBSs)*, and *Christmas Bird Counts (CBCs)* reflect the complicated pattern of migration of Red-tailed Hawks and make population trends difficult to discern. In sum, they indicate that Red-tailed Hawks (1) increased as breeding and wintering birds in northeastern North America, while generally decreasing or remaining stable in migration counts from 1974 to 2004; (2) increased in

the intermountain region of western North America since the early 1980s, increased in the southern and declined in the northern Rocky Mountains since 1995, and remained stable in the Pacific northwest since 1995; and (3) remained stable around the Gulf of Mexico.

Eastern North America

Historic analyses. Bednarz et al. (1990) reported a non-significant decline in counts of Red-tailed Hawks at Hawk Mountain Sanctuary from 1934 to 1986, and a *statistically significant* decline from 1973 to 1986, but provided no estimates of the rates of change. In a study of six *raptor migration counts* in eastern North America, Titus and Fuller (1990) reported a non-significant regional decreasing trend (-0.04% per year) from 1972 to 1987. Hussell and Brown (1992) reported that counts of Red-tailed Hawks at Hawk Ridge Bird Observatory declined non-significantly from 1974 to 1989 (-4.8 % per year), while those at Grimsby, Ontario (a spring count) declined a non-significant 2.1% per year from 1975 to 1990. At Cedar Grove, Wisconsin, Mueller et al. (2001) reported statistically significant increases in counts of Red-tailed Hawks between 1936 and 1999, and between 1951 and 1999. Overall, previous estimates of population trend for Red-tailed Hawks indicated that populations passing western Great Lakes migration watchsites were increasing, while those east of the Great Lakes declined or remained stable since the 1970s.

Recent analyses. Raptor migration counts, BBSs, and CBCs reflect the complicated pattern of migration of Red-tailed Hawks and make population trends difficult to discern. From 1974 to 2004, a statistically significant increase in migration counts was recorded at Lighthouse Point, Connecticut (3.1% per year, $P \leq 0.01$), and a

statistically significant decline was recorded at Hawk Mountain Sanctuary, Pennsylvania (-1.9% per year, $P \leq 0.01$). Estimated trends in the remaining raptor migration counts were not significantly different from zero. Cape May Point, New Jersey (-1.8% per year), Montclair Hawkwatch, New Jersey (-0.7% per year), Waggoner's Gap, Pennsylvania (-0.2% per year), and Holiday Beach, Ontario (-2.4% per year) all recorded non-significant declines during this period, while Hawk Ridge Bird Observatory, Minnesota (0.9% per year) recorded a non-significant increase.

From 1994 to 2004, a statistically significant increase in Red-tailed Hawk numbers was recorded at Lighthouse Point (3.1% per year, $P \leq 0.05$), and statistically significant declines were recorded at Cape May Point (-9.8% per year, $P \leq 0.05$) and Hawk Mountain Sanctuary (-1.8% per year, $P \leq 0.01$). Non-significant increases were recorded at Waggoner's Gap (3.1 % per year) and Hawk Ridge Bird Observatory (1.9% per year), whereas l'Observatoire d'oiseaux de Tadoussac, Quebec (-0.4% per year), Montclair Hawkwatch (-1.5% per year), and Holiday Beach (-3.1% per year) recorded non-significant declines (Fig. 1). Continued population change at the 1994–2004 rates will lead to a 50% increase of Red-tailed Hawk source populations in approximately 22 years at Lighthouse Point, 22 years at Waggoner's Gap, and 37 years at Hawk Ridge, and 50% declines in 173 years at Tadoussac, 7 years at Cape May, 46 years at Montclair, 39 years at Hawk Mountain, and 22 years at Holiday Beach.

*BBS*s, conducted for the U.S. Geological Survey, indicate statistically significant increases in Red-tailed Hawk populations in northeastern North America (Connecticut, Massachusetts, Maine, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, New Brunswick, Nova Scotia, Ontario, and Quebec east of 79° W),

which includes the areas from which the eight raptor migration counts receive migrants. The BBS estimates a statistically significant increasing trend of 2.8% ($P \leq 0.01$) per year for Red-tailed Hawks for 1976–2003 in this region (Sauer et al. 2004).

CBC data for the period 1974–2004 indicate *statistically significant* increases in counts of Red-tailed Hawks of 2.7% per year ($P \leq 0.01$) in the northeastern and 3.3% per year ($P \leq 0.01$) in the southeastern United States.

Western North America

Historic analyses. Hoffman and Smith (2003) reported statistically significant increases in migrating Red-tailed Hawks at the Goshute Mountains, Nevada (1983–2001), the Wellsville Mountains, Utah (1987–2001), the Manzano Mountains, New Mexico (1985–2001), and the Sandia Mountains, New Mexico (spring count, 1985–2001). No significant trends were recorded at Lipan Point, Arizona (1991–2001) or the Bridger Mountains, Montana (1992-2001). Updated analyses of these datasets suggested or confirmed recent stabilization or conversion to declines of previous increasing or stable trends in the Goshute, Wellsville, and Bridger Mountains and at Lipan Point, but a continued expansion in the Manzano Mountains.

Recent analyses. Raptor migration counts, CBCs, and BBSs indicate that populations of the Red-tailed Hawk have increased or remained stable in parts of the western United States since the mid-1980s. Statistically significant long-term increases in raptor migration counts were recorded at the Manzano Mountains, New Mexico from 1985 to 2005 (2.1% per year, $P \leq 0.05$) and the Goshute Mountains, Nevada from 1983 to 2005 (2.0% per year, $P \leq 0.05$). A non-significant increase was recorded from 1987 to 2005 at the Wellsville Mountains, Utah (1.5% per year, $P = 0.44$).

From 1995 to 2005, statistically significant increases were recorded at the Manzano Mountains (2.1% per year, $P \leq 0.05$), the Goshute Mountains (2.0% per year, $P \leq 0.05$), and Boise Ridge, Idaho (7.3% per year, $P \leq 0.01$); however, the trajectory in the Goshute Mountains has been variable but overall mostly stable to slightly declining since the mid-1990s, very similar to the patterns shown in the Bridger Mountains, Montana and Wellsville Mountains. Between 1995 and 2005, a statistically significant decline occurred at Lipan Point, Arizona (-10.7% per year, $P \leq 0.01$), while non-significant declines were recorded at Chelan Ridge, Washington (1998–2005, -5.0 % per year), Bonney Butte, Oregon (-1.7% per year), the Bridger Mountains (-2.2% per year), the Wellsville Mountains (1995–2004, -4.0% per year), and at Yaki Point, Arizona (-1.3% per year) (Fig. 1).

BBSs indicate a statistically significant, long-term increase of 1.5% per year from 1983 to 2005 in the BBS western region (Arizona, California, Idaho, Nevada, Oregon, Utah, Washington, western Montana, western Wyoming, western Colorado, western New Mexico, British Columbia; Sauer et al. 2004).

CBC data (National Audubon Society 2002) for the western United States and Canada (Alaska, Arizona, California, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming, Alberta, British Columbia, Northwest Territories, Yukon Territory) indicates that winter Red-tailed Hawk populations increased a statistically significant 1.3% per year ($P \leq 0.05$) from 1983 to 2005, and was unchanged (0.0% per year) from 1995 to 2005.

These data suggest that the current status of Red-tailed Hawks may be mixed across the West. A gradual, long-term, regional increase appears to be underway in the

northern Intermountain region. A recent stabilization of a previously stronger increasing pattern in the Goshute Mountains and the declining pattern farther south in the Grand Canyon may be related to drought effects and possible shifts in migration geography related to the drought. The Manzano data also indicate a long-term, regional increase for populations in the southern Rockies. Satellite tracking of several Red-tailed Hawks outfitted during migration in the Manzano Mountains showed summer ranges stretching from northern New Mexico to southwest Montana and southern Wyoming, and demonstrated clear route connections among the three Rocky Mountain sites (Bridger, Wellsville, and Manzano Mountains; HWI unpublished data, see www.hawkwatch.org). The evident discrepancies between trend indicators for the Manzanos and the two more northerly sites may indicate that populations in the southern Rocky Mountains currently are healthier and more productive than populations in the northern Rockies. Lastly, the relatively short-term datasets available from the Pacific Northwest indicate no distinct trends, suggesting that populations stretching from northern Oregon to west-central British Columbia (a summer range region identified by band-returns and satellite telemetry; see Hoffman et al. 2002 and www.hawkwatch.org) may be relatively stable at this time.

Gulf of Mexico

Recent analyses. Non-significant trends were recorded in raptor migration counts for Red-tailed Hawks in coastal Texas and Veracruz, Mexico between 1995 and 2005, with a slight positive rate of change estimated at Corpus Christi, Texas (1997–2005, 0.9% per year), but slight negative rates of change estimated at Smith Point, Texas (1997–2005, -0.4% per year) and Veracruz (1995–2005, -3.3% per year). Numbers of

migrants at watchsites in this region are generally low and variable, which produces broad confidence intervals, and does not permit us to rule out negative or zero trends for relevant source populations. Given the migration geography of the species, it is likely that only relatively local movements are monitored at watchsites in coastal Texas, and perhaps in Veracruz as well, and the low magnitude of trend estimates suggests these local populations are currently stable. *BBSs* for 1995–2005 increased non-significantly in Texas (1.7% per year), reinforcing the idea of stable population trends in the region.

HISTORIC CONSERVATION CONCERN

Changes in forest cover in northeastern North America and fire suppression and attendant changes in forest structure in western North America may have favored Red-tailed Hawks and led to population increases and range expansion in the 20th Century (Brown 1964, Bock and Lepthein 1976, Houston and Bechard 1983).

CURRENT STATUS AND CONCERN

Raptor migration counts suggest that populations of the Red-tailed Hawk are stable or decreasing slightly in eastern North America, but BBSs and CBCs suggest population increases. This marked difference suggests that either some populations became less migratory in the last 30 years, or migratory populations declined in some areas while breeding populations of resident hawks have increased. Trends in all indexes in western North America indicate that populations of the Red-tailed Hawk increased there since the 1980s, but have stabilized or started to decline in the last decade, possibly due to the influence of widespread drought since 1999 (Hoffman and Smith 2003).

Global and North American populations are considered secure (Appendix B, Table 1). In the breeding range monitored by raptor migration counts in northeastern

North America, the Red-tailed Hawk is considered secure in 12, apparently secure in one, vulnerable in one, and imperiled in one of the states and provinces (NatureServe 2006) (Appendix B, Table 2). In the breeding range monitored by raptor migration counts in western North America, the Red-tailed Hawk is considered secure in 13, apparently secure in two, and is not ranked or currently under review in one of the states and provinces (NatureServe 2006). Kirk and Hyslop (1998) rated the Red-tailed Hawk as 'not as risk' in most of Canada, with possible declines in the mixed-wood plains.

SUMMARY

The Red-tailed Hawk is considered secure throughout most of its range in North America. Migration counts have declined in eastern North America since 1995, but concurrent increases in BBSs and CBCs suggest that these migration trends may be the result of changes in migration geography or behavior. Elsewhere in North America, population monitoring generally indicates increasing or stable populations of this common raptor.

ADDITIONAL READING:

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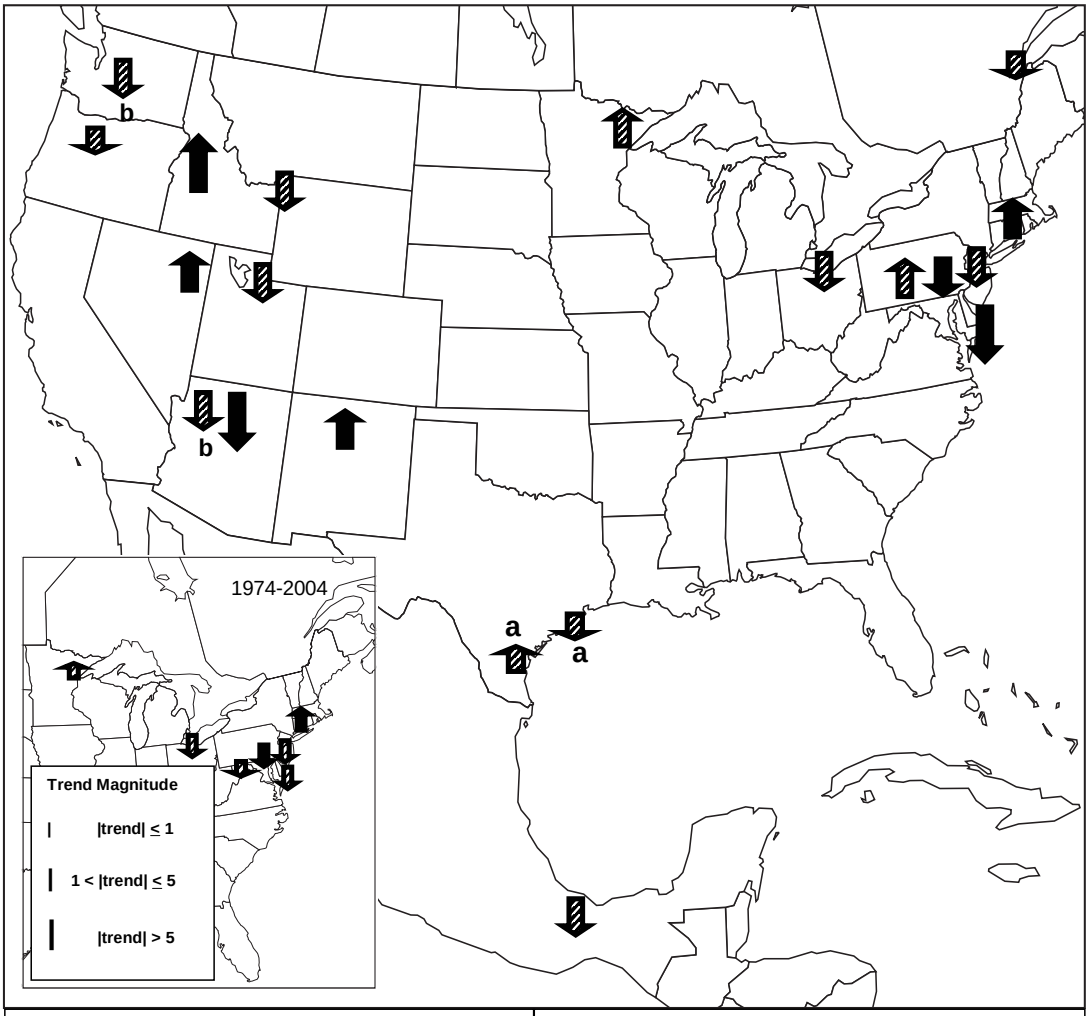

Figure 1. Population trends for Red-tailed Hawks at 8 eastern and midwestern (1994-2004) and 8 western (1995-2005) raptor migration counts in North America, and long-term trends (1974-2004) for 7 eastern counts (inset). Trend magnitudes are expressed in percent change per year.