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Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; 12-Month Finding on a  
Petition To List Two South American Parrot Species; Proposed Rule

**DEPARTMENT OF THE INTERIOR****Fish and Wildlife Service****50 CFR Part 17**

[FWS-R9-ES-2011-0071; MO 92210-0-0010 B6]

**Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition To List Two South American Parrot Species****AGENCY:** Fish and Wildlife Service, Interior.**ACTION:** 12-month finding.

**SUMMARY:** We, the U.S. Fish and Wildlife Service, announce a status review (12-month finding) on a petition to list the blue-headed macaw (*Primolius couloni*) and grey-cheeked parakeet (*Brotogeris pyrrhoptera*) as threatened or endangered under the Endangered Species Act of 1973, as amended (Act). After review of all available scientific and commercial information, we find that listing the blue-headed macaw or grey-cheeked parakeet is not warranted at this time. However, we ask the public to submit to us any new information that becomes available concerning the threats to these species or their habitat at any time.

**DATES:** The finding announced in this document was made on October 12, 2011.

**ADDRESSES:** This finding is available on the Internet at <http://www.regulations.gov> at Docket Number FWS-R9-ES-2011-0071. Supporting documentation we used in preparing this finding is available for public inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, Endangered Species Program, 4401 North Fairfax Drive, Room 420, Arlington, VA 22203.

**FOR FURTHER INFORMATION CONTACT:** Janine Van Norman, Chief, Branch of Foreign Species, Endangered Species Program, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, Room 420, Arlington, VA 22203; telephone 703-358-2171. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800-877-8339.

**SUPPLEMENTARY INFORMATION:****Background**

Section 4(b)(3)(B) of the Endangered Species Act (Act) (16 U.S.C. 1531 *et seq.*) requires that, for any petition to revise the Federal Lists of Endangered and Threatened Wildlife and Plants that contains substantial scientific or commercial information that listing the

species may be warranted, we make a finding within 12 months of the date of receipt of the petition. In this finding, we determine whether the petitioned action is: (a) Not warranted, (b) warranted, or (c) warranted, but immediate proposal of a regulation implementing the petitioned action is precluded by other pending proposals to determine whether species are threatened or endangered, and expeditious progress is being made to add or remove qualified species from the Federal Lists of Endangered and Threatened Wildlife and Plants. Section 4(b)(3)(C) of the Act requires that we treat a petition for which the requested action is found to be warranted but precluded as though resubmitted on the date of such finding, that is, requiring a subsequent finding to be made within 12 months. We must publish these 12-month findings in the **Federal Register**.

**Previous Federal Actions***Petition History*

On January 31, 2008, the Service received a petition dated January 29, 2008, from Friends of Animals, as represented by the Environmental Law Clinic, University of Denver, Sturm College of Law, requesting we list 14 parrot species under the Act. The petition clearly identified itself as a petition and included the requisite information required in the Code of Federal Regulations (50 CFR 424.14(a)). On July 14, 2009 (74 FR 33957), we published a 90-day finding in which we determined that the petition presented substantial scientific and commercial information to indicate that listing may be warranted for 12 of the 14 parrot species.

In our 90-day finding on this petition, we announced the initiation of a status review under the Act to list as threatened or endangered the following 12 parrot species:

Blue-headed macaw (*Primolius couloni*)  
Crimson shining parrot (*Prosopeia splendens*)  
Great green macaw (*Ara ambiguus*)  
Grey-cheeked parakeet (*Brotogeris pyrrhoptera*)  
Hyacinth macaw (*Anodorhynchus hyacinthinus*)  
Military macaw (*Ara militaris*)  
Philippine cockatoo (*Cacatua haematuropygia*)  
Red-crowned parrot (*Amazona viridigenalis*)  
Scarlet macaw (*Ara macao*)  
White cockatoo (*C. alba*)  
Yellow-billed parrot (*Amazona collaria*)  
Yellow-crested cockatoo (*C. sulphurea*)

We initiated this status review to determine if listing each of the 12

species is warranted, and opened a 60-day period to allow all interested parties an opportunity to provide comments and information on the status of these 12 species. The public comment period closed on September 14, 2009.

On July 21, 2010, a settlement agreement was approved by the Court (CV-10-357, D. D.C.) in which the Service agreed to submit to the **Federal Register** by July 29, 2011; September 30, 2011; and November 30, 2011, respectively, determinations on whether the petitioned action is warranted, not warranted, or warranted but precluded by other listing actions for no fewer than four of the petitioned species. On August 9, 2011, the Service published in the **Federal Register** a 12-month status review and proposed rule for the following four parrot species: Crimson shining parrot, Philippine cockatoo, white cockatoo, and yellow-crested cockatoo (76 FR 49202).

*Current Action*

In this status review, we make a determination whether the petitioned action is warranted, not warranted, or warranted but precluded by other listing actions for the blue-headed macaw and grey-cheeked parakeet. This **Federal Register** document complies, in part, with the second deadline in the court-approved settlement agreement mentioned above.

**Species Information and Factors Affecting the Species**

Section 4 of the Act (16 U.S.C. 1533) and implementing regulations (50 CFR part 424) set forth procedures for adding species to, removing species from, or reclassifying species on the Federal Lists of Endangered and Threatened Wildlife and Plants. Under section 4(a)(1) of the Act, a species may be determined to be endangered or threatened based on any of the following five factors:

- (A) The present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) Overutilization for commercial, recreational, scientific, or educational purposes;
- (C) Disease or predation;
- (D) The inadequacy of existing regulatory mechanisms; or
- (E) Other natural or manmade factors affecting its continued existence.

In considering whether a species may warrant listing under any of the five factors, we look beyond the species' exposure to a potential threat or aggregation of threats under any of the factors, and evaluate whether the species responds to those potential threats in a way that causes actual

impact to the species. The identification of threats that might impact a species negatively may not be sufficient to compel a finding that the species warrants listing. The information must include evidence indicating that the threats are operative and, either singly or in aggregation, affect the status of the species. Threats are significant if they drive, or contribute to, the risk of extinction of the species, such that the species warrants listing as endangered or threatened, as those terms are defined in the Act.

Below is a species-by-species description and analysis of the five factors. The species are considered in alphabetical order, beginning with the blue-headed macaw, followed by the grey-cheeked parakeet.

### I. Blue-Headed Macaw (*Primolius couloni*)

#### *Species Description*

The blue-headed macaw is a small species of macaw belonging to the family Psittacidae, the parrot family. It measures approximately 41 centimeters (cm) (16 inches (in)) in length. Average male and female wing length measures approximately 226 millimeters (mm) (8.9 in) and 220 mm (8.6 in), respectively. Average tail lengths for males and females measure 223 mm (8.7 in) and 204 mm (8.0 in), respectively (Forshaw 1973, p. 386). There is little sexual dimorphism between males and females (Lee 2010, p. 5). Adults are characterized by green general plumage with slightly more yellowish underparts. The entire head, except for the grey bare facial area, is blue. Primaries and primary-coverts (wing feathers) are blue and secondaries and outermost upper wing-coverts are blue edged with green. The upperside of the tail is blue, whereas the undersides of flight and tail feathers are a dusky yellow. The bill is grey-black, which becomes horn-colored on the culmen (the upper ridge of the bill) and at the tip of the upper mandible. The iris is yellow, and legs are flesh-pink. Immature blue-headed macaws have not been described (Forshaw 1973, p. 386).

The blue-headed macaw occurs mainly in eastern Peru, in the departments of Loreto, Huánuco, Pasco, Ucayali, Cusco, Madre de Dios, Ayacucho, Puno, and Junín; but it also occurs just inside the border of extreme western Brazil, in the States of Acre and Rondônia, and just inside the border of northern Bolivia, in the departments Pando, Beni, and La Paz (BirdLife International (BLI) 2011a, unpaginated; Tobias and Brightsmith 2007b, pp. 1–6). It has been recorded from 61 localities,

with no significant association with forest type, riverine habitats, degree of disturbance, or altitude. Records of the blue-headed macaw occur in both foothill regions and lowlands ranging in elevation from 200 meters (m) (656 feet (ft)) to 1,500 m (4,921 ft), and in a wide range of habitats, including terra firme forests (forests not inundated by flood waters), mature floodplain forests, successional river edge forests, and *Mauritia* palm swamps. One study found that this species was slightly more common in degraded areas than in pristine forests (Brightsmith 2009, personal communication (pers. comm.); Tobias and Brightsmith 2007, pp. 126, 129–130).

The estimated total global range for this species is 609,494 square kilometers (km<sup>2</sup>) (235,326 square miles (mi<sup>2</sup>)) and spans large areas of remote and unexplored terrain. The extent of occurrence (the global range, excluding disjunctions and major areas of inappropriate habitat) has been calculated as 460,000 km<sup>2</sup> (177,606 mi<sup>2</sup>), an area larger than previously thought (Brightsmith 2009, pers. comm.; Tobias and Brightsmith 2007, pp. 126, 129, 133). However, the extent of occurrence may be underestimated, as data is lacking from Brazil, the global range is more than 90 percent forested, and data suggest anthropogenic pressures have not eliminated this species from any large areas (Tobias and Brightsmith 2007, p. 129). Brightsmith (2009, pers. comm.) notes that the blue-headed macaw is not absent from any portion of its historical range.

In 1990, Lambert *et al.* (2003, as cited in Tobias and Brightsmith 2007, p. 127) estimated the global population of blue-headed macaws to be 10,000 individuals. In 2003, Gilardi estimated the global population to be well under 1,000 mature individuals; BLI revised the global estimate to 1,000–2,499 mature individuals in 2005 (Tobias and Brightsmith 2007, p. 127). It is unclear why population estimates have varied, but may be due to few published sources, anecdotal accounts, poor data quality (Tobias and Brightsmith 2007, p. 127), or differences in methodology. The most recent data suggest that this species occurs at a conservative density of one mature individual per 10–50 km<sup>2</sup> (3.0–19.3 mi<sup>2</sup>); using the calculated 460,000 km<sup>2</sup> extent of occurrence, Tobias and Brightsmith (2007, p. 126) estimate the population to be 9,200–46,000 mature individuals and 11,500–57,500 individuals if immature birds are included (Tobias and Brightsmith 2007, p. 133). Most of the 61 localities where this species has been recorded are easily accessible by road or river, potentially

causing a bias towards areas affected by trapping and underestimating abundance. Furthermore, much of the global range has yet to be surveyed (Tobias and Brightsmith 2007, pp. 132–133).

BLI (2011a, unpaginated), based on Tobias and Brightsmith (2007, pp. 126–138), reports that the population is declining at a slow-to-moderate and ongoing pace. However, Brightsmith (2009, pers. comm.) notes that this conclusion is not based on real evidence from wild populations. In fact, Tobias and Brightsmith (2007, p. 134) and Brightsmith (2009, pers. comm.) note that based on sightings data, there is no evidence of a decline in range or numbers of blue-headed macaws in the wild and that the possibility that the blue-headed macaw is increasing with the spread of degraded forests along rivers cannot be discounted (Tobias and Brightsmith 2007, pp. 132–133). Hennessey (2011, per. comm.) also notes that populations in Peru and Bolivia have remained healthy. There is no place within its range where this species has been searched intensively and does not occur (Brightsmith 2009, pers. comm.). At the Tambopata Research Center, blue-headed macaws have been steadily increasing since the year 2000 (Brightsmith 2009, pers. comm.). Sightings of the blue-headed macaw in Peru have also increased in the past 10 years (Brightsmith 2009, pers. comm.). Additionally, the lowlands of southeastern Peru, the core of the species' range, are the home of a wide variety of international research stations; parrot populations are monitored annually, so if the blue-headed macaw begins to decline, the research community would note this and begin specific protection and recovery actions (Brightsmith 2009, pers. comm.).

The diet of the blue-headed macaw has not been observed; however, parrots generally feed on seeds, ripe and unripe fruit, and flowers, but may also utilize other plant parts, such as nectar, leaves, and bark (Lee 2010, p. 6; Brightsmith 2006, p. 2; Cowen no date (n.d.), pp. 5, 17). Cowen (n.d., p. 16) found that a psittacine community, which included the blue-headed macaw, mainly fed on three tree species: *Ochroma pyramidale* (balsa), *Euterpe precatoria* (a species of palm), and *Cecropia peltata* (trumpet tree). This species may undergo some form of nomadism to track food across the landscape (Tobias and Brightsmith 2007, p. 132). Parrots may travel a few kilometers to hundreds of kilometers in search of food resources (Lee 2010, p. 8). Because parrots feed primarily on fruits and flowers, they are linked to the

fruiting and flowering patterns of trees; fluctuations in abundance and availability of these food sources may change diets, result in movements to areas with greater food availability, and influence local seasonal patterns of bird abundance (BLI 2011a, unpaginated; Lee 2010, p. 7; Tobias and Brightsmith 2007, p. 132; Brightsmith 2006, p. 2; Renton 2002, p. 17; Cowen n.d., pp. 5, 23). In some locations within its range, the blue-headed macaw is not considered uncommon and is recorded throughout the year, but appears scarce in others or varies seasonally in response to food availability (BLI 2011a, unpaginated).

Geophagy, the intentional consumption of soil, is known for parrots (Brightsmith 2004a, p. 534). In South America, parrots, including the blue-headed macaw, gather at riverbanks to consume soil; these sites are referred to as “clay licks” (Brightsmith 2004c, pp. 134, 137; Brightsmith 2004b, p. 5; Brightsmith 2004a, p. 535). Clay lick usage by blue-headed macaws is regular at several sites, and occurs year-round at Tambopata, Peru (Tobias and Brightsmith 2007, p. 131). There have been many theories proposed to explain why birds consume soil, including mineral supplementation, mechanical aid to digestion, pH buffering, treatment for endoparasites, and adsorption of dietary toxins (Brightsmith 2004c, p. 143; Brightsmith 2004b, p. 1; Brightsmith 2004a, p. 534–535). The reasons for soil selection may vary, with sites depending on the needs of the birds and the characteristics of the soils present (Brightsmith 2004a, p. 542). Research in Peru has shown that parrots consume soil to obtain sodium (mineral supplementation) and assist in the adsorption of dietary toxins (Brightsmith 2004c, p. 134; Brightsmith 2004b, pp. 3–4; Brightsmith 2004a, pp. 541–542). Furthermore, research conducted at the Tambopata Research Center in Peru found that local clay lick use by parrots varied seasonally, with low use occurring at a time when parrots appear to leave the area due to low fruit availability and peaks occurring during the breeding season (Brightsmith 2004b, p. 3). Peak clay lick use coincided with the breeding season when adults feed clay to young chicks during the period of maximum growth and least resistance to natural toxins found in their diet (Brightsmith 2004b, p. 4).

The blue-headed macaw is reported to occur in pairs or groups of three. However, groups of 4 or more are routinely reported throughout the range, groups of 10 or more have been reported from 13 localities, and 2 groups were

reported to have 53 and 60 individuals, respectively (Tobias and Brightsmith 2007, p. 131–132). Few courtship displays have been described for parrots, but are assumed to be simple and include actions such as bowing, wing-drooping, wing-flicking, tail-wagging, and foot raising (Austin 1961, p. 33). Most parrot species are monogamous and remain paired for long periods of time, even for life. The age at which parrots reach sexual maturity varies but, in general, is between 3 and 4 years in larger species and 1 to 2 years in smaller species (Austin 1961, p. 32). In captivity, the age in which the species is able to breed ranges from 2.5 to 5 years (Tobias and Brightsmith 2007, p. 132). The nesting season of the blue-headed macaw is not known, but for other species of parrots and macaws found at the same site, the nesting season runs from June to November and November to March, respectively (Brightsmith 2006, pp. 7, 9). Although nesting has not been recorded for the blue-headed macaw, most parrots use natural tree cavities or cavities within cliffs (Lee 2010, p. 4). This species is reported to have low reproductive output in the wild (CITES 2002, p. 1), but this may be based on little data (Tobias and Brightsmith 2007, p. 32). In captivity, the clutch size for blue-headed macaws is reported to be 2–4 eggs (Vit 1997, as reported in Tobias and Brightsmith 2007, p. 132). Female parrots generally incubate the eggs and rely on the male for food, although in some species the males contribute to incubation (Lee 2010, p. 5; Austin 1961, p. 33). Parrot chicks are born blind and naked or with sparse down, which is white in most species. The young of small parrots develop slowly and remain in the nest for 3–4 weeks (Austin 1961, p. 33). Adult longevity in the wild is unknown for the blue-headed macaw, but a congeneric (a species belonging to the same taxonomic genus as another species), the blue-winged macaw (*Primolius maracana*), is reported to live at least 31 years in captivity (Tobias and Brightsmith 2007, p. 132).

#### Conservation Status

The blue-headed macaw is currently classified as “vulnerable” by the International Union for the Conservation of Nature and listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Species included in CITES Appendix I are the most endangered CITES-listed species. They are considered threatened with extinction, and international trade is permitted only under exceptional circumstances,

which generally precludes commercial trade.

#### Summary of Factors Affecting the Blue-Headed Parrot

##### *A. Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range*

One of the main threats to neotropical parrot species, in general, is deforestation (Snyder *et al.* 2000, p. 98). The Amazon region has the world’s highest absolute rate of deforestation (Laurance *et al.* 2002, p. 738) and is currently threatened by increasing legal and illegal logging, road projects, conversion of forests to agriculture, cattle ranching, oil and gas extraction, and mining (Lee 2010, p. 2; MacLeod 2009, p. 6; Cowen 2007, p. 9; Magrin *et al.* 2007, p. 590; Tobias and Brightsmith 2007, p. 134; Hume *et al.* 2006, p. 10; Asner *et al.* 2005, p. 480; Alverson *et al.* 2001, p. 113; Laurance *et al.* 2001, p. 309; Snyder *et al.* 2000, p. 98; Nepstad *et al.* 1999, p. 505). However, in western Amazonia, especially in Peru and Bolivia where this species occurs, the proportion of forest cover is still high and large tracts of intact forests continue to exist even though some forests have been cleared around some major towns (Finer *et al.* 2008, pp. 1, 6; Tobias and Brightsmith 2007, p. 134; Kometter *et al.* 2004, p. 6). Information on the extent of deforestation within the States or departments where the blue-headed macaw occurs is limited; most information is at the national level and may not necessarily apply to this species, especially in Bolivia and Brazil where it occurs just inside the borders of these countries.

##### Logging

Tropical forests, especially the Amazon, have experienced increasing rates of deforestation for the past few decades, largely for the conversion of land to food crops or pastures, and selective harvesting of timber has increased in rate and extent (Granoff 2008, p. 553; Asner *et al.* 2005, p. 480; Laurance 1999, p. 112; Laurence 1998, p. 411).

Selective logging targets older, larger trees that parrot species depend on for nesting and food (Cowen 2007, p. 9; Hume *et al.* 2006, p. 11). The loss of these keystone trees may pose a threat to parrot populations by creating a shortage of suitable nesting sites, increasing competition, and causing the loss of current generations through an increase in infanticide and egg destruction (Lee 2010, pp. 2, 12). If not managed correctly, selective logging may also cause widespread collateral

damage to remaining trees, subcanopy vegetation, and soils (Asner *et al.* 2005, p. 480). An additional 10 to 40 percent of the living biomass of a forest may be damaged by a poorly managed logging harvest process (Nepstad *et al.* 1999, p. 505) and can double the total amount of forest degraded by human activities (Asner *et al.* 2005, p. 481). The loss of trees may influence the availability and abundance of food sources for the blue-headed macaw and may result in changes in diet or movement to areas with greater food availability. Although individual blue-headed macaws, nests, or eggs may be affected by logging activities, we have no information to indicate impacts are occurring at a level affecting the status of the species.

Typically, logging involves a low rate of extraction (less than 3 cubic meters (m<sup>3</sup>) per ha (106 cubic feet (ft<sup>3</sup>) per ac) and, if implemented correctly, only removes as many trees as the forest can regenerate (Colitt 2010, unpaginated; Rodríguez and Cubas 2010, p. 78). Because the valuable timber removed is often very old, long intervals are needed for timber stands to recover from harvest (Laurance 1999, p. 114), and if provisions are made for the regeneration of these commercial trees, the effects of logging on tree diversity and species composition may be short-lived (Fredericksen 2003, p. 10). In fact, if well managed, selective logging can mimic natural disturbances, and if hunting pressure is low, most wildlife species can persist in logged forests or recolonize harvested areas from nearby unlogged patches (Laurance 1999, p. 114). Studies have indicated a relatively minor impact on some wildlife species from logging, and among those that may actually benefit are frugivorous birds, such as the blue-headed macaw, due to the positive impact on fruit abundance (Fredericksen 2003, p. 11). Additionally, frugivores usually tolerate fragmentation better and are capable of using deforested areas (Sekercioglu 2007, p. 285). Many parrots are not habitat specialists and thrive in mosaics of different successional habitats (Snyder *et al.* 2000, p. 99). Many species of lowland forest habitat seem to do relatively well in modified human environments, as long as a mosaic of habitats in different successional stages is maintained and poaching and trapping are controlled (Snyder *et al.* 2000, p. 99). Although the blue-headed macaw could potentially benefit from some logging activities, we found no information to what extent, if any, this species benefits from these activities. However, species experts have stated that the possibility of the species

increasing with the spread of degraded forests along rivers cannot be discounted (Tobias and Brightsmith 2007, pp. 132–133) and Hennessey (2011, pers. comm.) has stated that the blue-headed macaw populations in Peru and Bolivia have remained healthy.

#### Peru

With approximately 68 million forested hectares (ha) (168 million acres (ac)) covering 53 percent of its land area, Peru has the second most extensive forests in Latin America, after Brazil (FAO 2011, p. 118; Salo and Toivonen 2009, p. 610). In the early 2000s, Peruvian Amazonia experienced a series of forestry reforms, including the implementation of forest concessions (forest leases), which led to a rush for newly allocated timber resources (Salo and Toivonen 2009, p. 609; Oliveira *et al.* 2007, p. 2). More than 7 million ha (17.2 million acres; approximately 10 percent of the country's forest) are now designated as forest concessions in the regions of Ucayali, Loreto, Madre de Dios, San Martín, and Huancayo; another 18 million ha (44.5 million ac; nearly a quarter of Peruvian forests) are still potentially available for concession designation in the near future (Rodríguez and Cubas 2010, p. 79; Salo and Toivonen 2009, pp. 609–610).

The aim of the forestry reform was to target issues such as control and enforcement of forestry activities, as well as illegal forestry activities (Salo and Toivonen 2009, p. 610). Part of the new forestry reform included a new forestry law (See Factor D) which classified Peru's forests into 6 categories, including permanent production forests. This category includes those forests in which forest concession contracts can be assigned. A concession contract gives the holder the right to exploit the resources within a given area, but also gives the holder responsibility to manage the resources (Salo and Toivonen 2009, p. 611). Studies have shown that forest concessions in Peru have provided forests with protection from deforestation (Salo and Toivonen 2009, p. 620; Oliveira *et al.* 2007, pp. 2–3). Although we do not know the exact location of the recently designated 7 million ha (17.2 million acres) of forest concessions, they do not appear to have impacted the blue-headed macaw, given that the range has remained 90 percent forested and there is no evidence in a decline in the range or population of this species. We do not know where the 18 million ha (44.5 million ac) of potential forest concessions are located in regards to locations of blue-headed macaw; however, if located within the

range of this species, data suggest that these concessions could provide forests with protection against deforestation.

To date, the forests of Peru, including large areas within the range of the blue-headed macaw, have mainly been subjected to selective logging (Salo and Toivonen 2009, p. 610; Tobias and Brightsmith 2007, p. 134; Fredericksen 2003, p. 10), which has contributed to only 2.5 percent of Peru's overall deforestation (Salo and Toivonen 2009, p. 610). Nonetheless, there are reports of illegal logging in Peru, including one study that found evidence of illegal logging within the Muruanahua Reserve and Alto Purús National Park in Peru, which is a known location for the blue-headed macaw (Upper Amazon Conservancy 2010, unpaginated; World Wildlife Fund in Indian Country Today 2007, unpaginated). However, there is no evidence that selective logging removes habitat for this species (Tobias and Brightsmith 2007, p. 134). Furthermore, it is possible that the blue-headed macaw could benefit from logging given that frugivores tend to benefit from logging due to the increase in fruit availability, and lowland habitat species, such as the blue-headed macaw, do well in modified human environments if successional forests are left intact and poaching is controlled. In addition, species experts have stated that the possibility that the species is increasing with the spread of degraded forests along rivers cannot be discounted (Tobias and Brightsmith 2007, pp. 132–133). Because the range of the blue-headed macaw has remained 90 percent forested and there is no evidence of a decline in either the range or population, we have no indication that selective logging or illegal logging has impacted the blue-headed macaw. Large areas within the range of the blue-headed macaw are slated for selective logging (Tobias and Brightsmith 2007, p. 134); however, because there is no evidence that selective logging removes habitat, and in fact the species may benefit from selective logging, we have no reason to believe that future selective logging activities in Peru will be a threat to this species.

In summary, we find that deforestation via current forest concessions and selective logging have not impacted the status of the blue-headed macaw based on the fact that the range has remained 90 percent forested and there is no evidence of a decline in the range or population of this species. Although we do not know the locations of the forest concessions that may be designated in the future, if they are located within the range of the blue-headed macaw, they may provide

protection to blue-headed macaw habitat from deforestation. Furthermore, we found no information indicating that the known areas of the blue-headed macaw's range that are slated for selective logging will impact the status of the species; in fact, it is possible that the species could benefit. Additionally, there are several conservation programs being implemented in Peru to address deforestation (see *Conservation Programs* below). Therefore, we have reason to believe that future deforestation will not impact the status of this species in Peru.

#### Bolivia

Approximately 57.2 million ha (141.3 million ac) (53 percent) of Bolivia's total area is forested (FAO 2011, p. 118); of this forested area, 38.9 million ha (96.1 million ac) are within the Bolivian Amazon and constitute 5 percent of the total Amazon forest (Locklin and Haack 2003, p. 774). Large tracts of primary forest remain in Bolivia, but it is likely that some of these will be subjected to logging (Fredericksen 2003, p. 13) as forest products contribute to Bolivia's national exports (Byers and Israel 2008, p. vi). As of 2006, 89 timber companies held the rights to 5.8 million ha (14.3 million ac) of logging concessions (Pacheco 2006, p. 208). The forests of Bolivia have mainly been subjected to selective logging (Salo and Toivonen 2009, p. 610; Fredericksen 2003, p. 10), which has been done at very low levels and with low human pressure, allowing them to remain largely intact (Fredericksen 2003, p. 10). There are management issues that still need to be addressed, including sufficient regeneration time for commercial species (Fredericksen 2003, p. 10). However, given that Bolivia constitutes only a small part of this species' range, and the fact that we found no information indicating that logging has impacted the blue-headed macaw range or population in any of its range countries, we have no reason to believe that logging is a threat to the species in Bolivia. Furthermore, we have no information indicating any future logging activities will impact the blue-headed macaw.

#### Brazil

Brazil contains 519.5 million ha (1.2 billion ac) of forested area, 62 percent of the total land area (FAO 2011, p. 118). Logging concessions total only 150,000 ha (370,658 ac) (Colitt 2010, unpaginated). However, by the end of 2010, Brazil was to have auctioned off an additional 1 million ha (2.5 million ac) of forest concessions to private companies in an effort to reduce the

demand for illegal logging. Concessions help establish control over public areas usually occupied illegally (Colitt 2010, unpaginated).

Logging is occurring in blue-headed macaw habitat in extreme western Brazil, but this species is a generalist and can exist within degraded habitats. Rondônia and Acre are among Brazil's major timber-production states (Asner *et al.* 2005, p. 480); however, this species occurs just inside the border of western Brazil and we found no information suggesting that the range or population of the blue-headed macaw have been impacted by logging in Brazil and no information indicating logging may affect this species in the future.

Large areas within the range of the blue-headed macaw have experienced, or are slated for, selective logging (Tobias and Brightsmith 2007, p. 134), and designation of forest concessions could potentially cause changes in land-use practices, perhaps affecting plant and wildlife species composition and diversity of an assigned area (Salo and Toivonen 2009, p. 610; Fredericksen 2003, p. 10). However, BLI (2011a, unpaginated) reports that "much of the forest within the species' range is still intact, and although the Bolivian forest is threatened by expansion of the logging industry, this species may benefit from the consequent patchwork clearance."

Ninety percent of the range of the blue-headed macaw remains forested, and there is no evidence of a decline in either the range or the population. Logging could affect individual blue-headed macaws though the loss of food or nesting resources; however, considering the extent of intact forests within the range of this macaw and no evidence of a decline in the population (Tobias and Brightsmith 2007, p. 134), as well as the possibility that the blue-headed macaw is increasing with the spread of degraded forests along rivers (Tobias and Brightsmith 2007, pp. 132–133), we have no evidence to suggest that logging is affecting the blue-headed macaw to a degree that it is affecting the status of the species. Additionally, we have no information to suggest that logging may become a threat to the status of the blue-headed macaw in the future.

#### Roads and Infrastructure

Oliveira *et al.* (2007, p. 2) estimated that 75 percent of the total Peruvian Amazon forest damage was within 20 km (12.4 mi) of the nearest road. In Bolivia, studies have detected small-scale roadside deforestation extending over 30 km (18.6 mi) from major roads (Steininger *et al.* 2001, p. 132). Studies

on the effects of roads on deforestation in the Brazilian Amazon have shown a 30 percent forest loss within 10 km (6.2 mi) of roads and highways, with highways causing an additional 20 percent forest loss within 11–25 km (6.8–15.5 mi), and 15 percent loss within 26–50 km (16–31 mi) (Zambrano *et al.* 2010, p. 158). Despite the deforestation occurring along roads and highways, the range of the blue-headed macaw is 90 percent forested, and we found no information indicating that the species has been impacted by roads or any subsequent deforestation. In fact, species experts (Hennessey 2011, pers. comm. and Tobias and Brightsmith 2007, p. 134) indicate that this species is doing well, despite some localized impacts from infrastructure and roads.

The Initiative of the Integration of the Regional Infrastructure of South America (IIRSA) is a plan endorsed by the South American presidents, which includes around 350 infrastructure projects, such as highways, bridges, railways, ports, airports, and transmission corridors, to accomplish regional economic integration and facilitate trade (Babbitt 2009, pp. 28–29). At the center of this plan is the nearly complete Transoceanic Highway, a 1,000-km (621.3-mi) highway that connects the Brazilian State of Acre to the Peruvian coast, passing through Puerto Maldonado (Garcia-Navarro 2009, unpaginated; Babbitt 2009, p. 28; Tobias and Brightsmith 2007, p. 134) and near several other locations in which the blue-headed macaw has been recorded, bisecting its range (Tobias and Brightsmith 2007, p. 134). The blue-headed macaw occurs within the immediate outskirts of Puerto Maldonado, one of the areas with significant disturbance, suggesting that this species is not greatly affected by anthropogenic pressures (Brightsmith 2009, pers. comm.; Tobias and Brightsmith 2007, p. 129).

Future urban expansion in Puerto Maldonado resulting from the highway may put pressure on the protected area of Tambopata (Delgado 2008, p. 27), where the blue-headed macaw has been recorded. Although the Transoceanic Highway is not located within Bolivia, the connection between Cobija, Bolivia, and Brasília, Brazil, allows Cobija, a recorded location for the blue-headed macaw, to benefit from the road project and potentially grow in the future (Delgado 2008, p. 31). Additionally, IIRSA plans to build another highway that would branch off from the Transoceanic Highway in Rio Branco, the capital of Acre. If completed, this highway will run through the forests of Serra do Divisor National Park, a known

location for the blue-headed macaw (Babbitt 2009, p. 31). In spite of this information, we found no indication that the range, habitat, or population of the blue-headed macaw has been impacted by the Transoceanic Highway. Given that the species has not been adversely affected by road construction or other infrastructure, we have no information suggesting that the status of this species may be impacted in the future by the Transoceanic Highway.

Although there has been road development within Peru, Bolivia, and Brazil, and individual blue-headed macaws could potentially be affected by road development through the loss of food and nesting resources, we have no information indicating that the status of the species has been adversely impacted by this development in the past. The range remains 90 percent forested and there is no evidence that the range or population has declined. Furthermore, Brightsmith (2009, pers. comm.) notes that although road construction and related deforestation may affect part of the blue-headed macaw's range, habitat analyses to date show no evidence that deforestation will adversely affect the species in the future.

#### Agriculture and Ranching

Logging and modern roads facilitate infiltration into pristine forests by migrant settlers who use slash-and-burn methods for agriculture and cattle pastures (Laurance 1998, p. 411). Slash-and-burn agriculture involves the clearing of land and burning of debris (Locklin and Haack 2003, p. 775; Nepstad *et al.* 1999, p. 505). Often, plots are abandoned after only two or three cycles, and then more forests are cleared to establish new plots (Reyes-García *et al.* 2007, p. 406; Duery and Vlosky 2005, p. 10). Production may be limited to subsistence farming if roads are in poor condition or if the cost of transportation is high. However, if roads are in good condition and provide access to international and national markets, production may expand to cash crops (Zambrano *et al.* 2010, p. 158; Locklin and Haack 2003, p. 780).

Agriculture is considered the main cause of deforestation in the lowlands of Bolivia (Pacheco 2006, p. 215). With pressures for agriculture expansion, large areas are being cleared for both soybean farms and cattle ranches (Pacheco 2006, pp. 213, 216; Duery and Vlosky 2005, p. 10; TNC 2001, unpaginated; Laurance 1998, p. 411). The San Buenaventura-Puerto Heath road runs through the Madi National Park, a known location of the blue-headed macaw. The greatest human-caused impact along this road was the

conversion of forest via slash-and-burn agriculture, although rates of deforestation were relatively low (Locklin and Haack 2003, pp. 775, 778). Forest clearance patterns of indigenous communities practicing shifting cultivation have been observed, particularly along rivers, throughout Beni, Pando, and La Paz (Steininger *et al.* 2001, p. 131). Reyes-García *et al.* (2007, p. 406) found that the Tsimane', a native Amazonian society within Beni, practice slash-and-burn agriculture and abandon their plots after one or two cultivation cycles to establish new plots. This society is also moving from subsistence farming towards cash crops, which requires additional forest clearing and contributes to further deforestation (Reyes-García *et al.* 2007, p. 407). We have no information indicating that the blue-headed macaw has been or will be impacted by agriculture in Bolivia, and given that Bolivia is such a small portion of the species' range, we have no reason to believe agricultural expansion is affecting or will affect this species at the population level.

Current expansion of deforestation in Bolivia Amazonia is also associated with cattle ranching (Pacheco 2006, p. 216). Its contribution to deforestation is expected to increase in the future due to topographical limitations of mechanized agriculture. In Beni, the impacts of cattle ranching may be a greater concern, as 65 percent of all the cattle herds in Bolivia are located here (Pacheco 2006, pp. 215–216). However, the species' range in Bolivia is limited to just inside the border and we have no information indicating that the blue-headed macaw has been impacted, or could be impacted, by cattle ranching in that area of its range.

In Brazilian Amazonia, cattle production is the dominant land use in deforested areas and is the main factor driving deforestation (Pacheco 2006, p. 223; Laurance 1999, p. 113; Fearnside 1996, p. 21). Large-scale ranchers (those that own over 100 ha (247 ac)) are thought to be responsible for 70–75 percent of all the deforestation in this region (Laurance 1999, p. 113). Furthermore, illegal slash-and-burn practices have already destroyed 20 percent of the Brazilian Amazon (Colitt 2010, unpaginated). The States of Rondônia and Acre, where the blue-headed macaw occurs, are currently experiencing conversions of forest for agriculture and cattle ranching (Tobias and Brightsmith 2007, p. 134). However, given this species' limited range just inside the border of Brazil and its ability to thrive in altered habitat, coupled with no information indicating that cattle ranching has impacted, or will impact,

the blue-headed macaw within its limited range in Brazil, we do not believe that cattle production is currently, or will be a threat to this species, now or in the future.

Although the migration of settlers, and the subsequent farming, has been named by some as a contributing factor to deforestation in Peru (Painter 2008, unpaginated; Hume *et al.* 2006, p. 3), we found little information on the extent of deforestation due to agriculture. In Manú National Park, 63,500 ha (156,911 ac) of 1.7 million ha (4.2 million ac) were deforested up to the year 2005 for agricultural activities (Cabieses 2009, p. 26). However, since 2006, the Integrated Programme to Strengthen the Local Capacity of Small Farmers of the Manú Biosphere Reserve Buffer Zone of Peru has worked with families within the park to foster activities compatible with organic farming and incorporate natural resource management into agricultural activities. By 2008, 530 families helped reforest 151 ha (373 ac) with mostly native species (Cabieses 2008, pp. 26–27). In the area surrounding Cordillera Azul National Park (a recorded location for the blue-headed macaw), the rate of deforestation due to the coffee and tea plantations and cereal grain farms (Chatterjee 2009, p. 557) has increased. The core zone of the Park is largely free of human inhabitants, with the exception of one rancher with 220 ha (543.6 ac) of pasture and some reports of indigenous people in the southeastern part of the Park. In 2008, the Peruvian government granted a 20-year contract to the Peruvian NGO Centro de Conservación, Investigación y Manejo de Areas Naturales Cordillera Azue (CIMA) that allows CIMA to manage the park under the supervision of the State and according to clearly defined guidelines. (Ostic n.d., p. 1). In addition, we found no information indicating agriculture in any of the range states has impacted, or will impact, the blue-headed macaw, thus we do not believe it will impact the species in Peru, especially given the limited and localized nature of agriculture activities.

Agriculture and cattle ranching activities are currently taking place within the range of the blue-headed macaw, especially within Bolivia and Brazil. However, given that these two countries make up a minimal part of the species range, it is unlikely to have any effect on the species. Although it is possible that individual blue-headed macaws could be affected by these activities through the loss of food or nesting resources, we have no information indicating the species has been adversely impacted by either

activity; in fact, the blue-headed macaw seems to benefit from some fragmented habitat. There is no evidence of a decline in the range or population of the blue-headed macaw and 90 percent of the species' range remains forested. Both agriculture and cattle ranching are expected to expand in the future; however, we have no information on the extent of this expansion and no information indicating either activity will be a threat to the species in the future.

#### Oil and Gas

The western Amazon contains large reserves of oil and gas, many that are yet untapped (Finer *et al.* 2008, p. 1). Global demand for energy and record oil prices have launched unprecedented levels of oil and gas exploration and extraction in western Amazonia, with some of the most intense activity occurring in Peru (Kolowski and Alonso 2010, p. 917; Babbitt 2009, p. 31; Finer *et al.* 2008, p. 1).

National governments have delineated specific areas, or blocks, that are zoned for hydrocarbon (e.g., natural gas and petroleum) activities; these blocks may be leased to state and multinational energy companies for exploration and production (Finer *et al.* 2008, p. 1). In western Amazonia, there are approximately 180 oil and gas blocks covering about 688,000 km<sup>2</sup> (265,638 mi<sup>2</sup>), which are operated by at least 35 multinational companies (Finer *et al.* 2008, p. 2). These oil and gas blocks may bring new access routes throughout the area, contributing to deforestation, as it did in eastern Amazonia and the southern Brazilian Amazon (Finer *et al.* 2008, p. 6).

In 2003, Peru reduced royalties to encourage investment and sparked an exploration boom. As of 2008, 72 percent of the Peruvian Amazon was zoned for oil and gas by the government into 64 separate blocks; 48 of these blocks are currently active, the others may be subjected to active exploration in the near future (Kolowski and Alonso 2010, p. 917; Finer *et al.* 2008, pp. 2, 5). The only areas fully protected from oil and gas activities are national parks and national and historic sanctuaries, which cover approximately 12 percent of the Peruvian Amazon. However, 20 blocks overlap with 11 less strictly protected areas, such as communal reserves and reserved zones (Finer *et al.* 2008, p. 2). Although oil and gas exploration and production are occurring in Peru, we have no information indicating that the blue-headed macaw has been impacted, or will be impacted, by oil and gas activities in Peru.

In Bolivia and Brazil, areas open to oil and gas explorations are increasing rapidly (Finer *et al.* 2008, p. 2). In Bolivia, two leased blocks, covering 15,000 km<sup>2</sup> (5,791 mi<sup>2</sup>), include large parts of Madidi National Park, a recorded location for the blue-headed macaw, as well as other parks where the blue-headed macaw has not been recorded; exploration in this region is imminent. The primary task of a newly created oil company, comprised of the State oil companies of Bolivia and Venezuela, is to explore for oil in newly created blocks surrounding Madidi National Park. Many other blocks in Bolivia overlap with protected areas (Finer *et al.* 2008, p. 5). We have no information indicating that the blue-headed macaw has been adversely impacted by oil and gas exploration in Bolivia; species experts have indicated that there is no evidence of a decline in the range or population of the blue-headed macaw (Tobias and Brightsmith 2007, p. 134). Furthermore, we do not have information to indicate that the species will be impacted by future oil and gas exploration in Bolivia.

In Brazil, a 400-km (248.5-mi) gas pipeline was completed in 2009, running from Urucus gas field (State of Rondônia) to Manaus (State of Amazonas). Another 500-km (310.6-mi) pipeline has been proposed to carry gas to Porto Velho in Rondônia. Additionally, Brazil's National Petroleum Agency has announced plans to look for oil and gas in the State of Acre, on the border with Peru and Bolivia (Finer *et al.* 2008, p. 5), an area that contains known locations for the blue-headed macaw. Oil and gas exploration and production do not necessarily impact parrots. Drilling operations often have a smaller footprint than other extractive activities, and this is further reduced once the well is installed. Further, we found no information that existing oil and gas operations have impacted any parrot populations in any of the range countries. Because there is no evidence of a decline in the range or population of the blue-headed macaw in Brazil, we have no information indicating that the blue-headed macaw has been impacted by oil and gas exploration in Brazil. Furthermore, we do not have information to indicate that the species will be impacted by future oil and gas exploration in Bolivia.

Pending oil and gas projects are the primary threats to Peru's Camisea region and Bolivia's Madidi region (Finer *et al.* 2008, p. 6). Although individual blue-headed macaws could potentially be affected by oil and gas explorations through the loss of food or nesting

resources, there is no evidence of a decline in the range or population of the blue-headed macaw, and we have no information indicating that the species has been adversely impacted by oil and gas exploration. Furthermore, we have no information to indicate that the species will be impacted by future oil and gas exploration.

#### Mining

Over the last decade, the price of gold has increased 360 percent, with an annual rate of increase of approximately 18 percent; subsequently, the number of non-industrial gold mining operations in developing countries has risen (Swenson *et al.* 2011, p. 1). Many of these operations are illegal, as they are set up by residents without permits or formal title to the land, and without an environmental impact analysis or miner education (Swenson *et al.* 2011, p. 1).

In Peru, the expansion of gold mining has been encouraged by the Transoceanic Highway, which has drawn impoverished Peruvians into the lowlands in search of a livelihood and hoping to strike it rich (Garcia-Navarro 2009, unpaginated). Madre de Dios is currently undergoing a new gold rush due to the high price of gold, increased oil and gas activities, and the completion of infrastructure projects (Hajek *et al.* 2011, *in press*). This region is Peru's third largest producer of gold and accounts for 70 percent of Peru's artisanal (small-scale or subsistence miner) gold production (Swenson *et al.* 2011, p. 2). Concurrent with increasing annual gold prices, mining deforestation has been increasing since 2003. From 2003 to 2006, annual mining deforestation was approximately 292 ha (721.5 ac) per year. From 2006 to 2009 this rate increased to 1,915 ha (4,732 ac) per year, a six-fold increase (Swenson *et al.* 2011, p. 4). Furthermore, Swenson *et al.* (2011, pp. 4–5) found that mining deforestation in this area is outpacing deforestation due to settlements, although this scenario might be different for areas with more secondary roads, which tend to correlate with higher rates of deforestation. One study found that forest recovery following small-scale gold mining was extremely slow and qualitatively inferior to regeneration following other human-caused disturbances (Mol and Ouboter 2003, p. 202). However, these operations are typically small and require very little land-clearing. Given the relatively small amount of land conversion for gold mining, we found no information indicating that deforestation via mining has impacted the blue-headed macaw, nor did we find any information



indicating this species will be impacted by mining in the future.

In addition to deforestation, impacts to the environment from gold mining stem from acid mine drainage and air and water pollution from contaminants, such as mercury. During gold processing, mercury is released into sediments, waterways and the atmosphere. As parrots are known to use riverside clay licks, they may be at risk of mercury entering their systems when they ingest soil particles. Many developing countries have reached agreements with large gold mining companies that do not use mercury, but regulating small-scale, artisanal mines continues to be a struggle (Swenson *et al.* 2011, pp. 1, 5). Furthermore, gold miners might actively erode riverbanks, which may include essential clay licks used by parrots (Lee 2010, p. 12). However, we have no information indicating that mining has affected the blue-headed macaw.

Permits for mining require an environmental impact report. Madre de Dios has the highest number of unapproved mining permits in Peru; moreover, there is little effective enforcement of unapproved permits or illegal miners, and therefore, little incentive to apply for a permit (Swenson *et al.* 2011, p. 2). Miners are able to use waterways for transportation and are capable of invading far reaches of communities and protected areas. Lack of funding, staff, and staff training makes patrolling these remote areas difficult (Swenson *et al.* 2011, p. 5). Two of the three mining sites studied by Swenson *et al.* (2011, p. 4) are located less than 7 km (4.3 mi) from the Amaraeri Communal Reserve and less than 70 km (43.5 mi) from Manu National Park. In a study of 54 national parks in Latin America, mining was considered a threat in approximately 20 (37 percent) of the parks, of which 11 (55 percent) were located in Peru (Swenson *et al.* 2011, p. 4). Peru's newly created Ministry of Environment is working to control illegal mining, and a recent effort was made through a moratorium on new mining concessions (Swenson *et al.* 2011, p. 5).

In addition to the major mining growth centers, there are many small expanding areas of mining scattered across Madre de Dios, which are harder to detect (Swenson *et al.* 2011, p. 5). Rising annual gold prices and an increasing number of miners setting up illegal mines may fragment once large areas of pristine forests. Although individual blue-headed macaws could potentially be affected by mining through the loss of food or nesting resources, we have no information that

the species has been adversely impacted by mining. In fact, this species tends to benefit from patchwork clearance of forests (BLI 2011a, unpaginated). Furthermore, we do not have any information indicating the species may be impacted by future mining operations.

#### Conservation Programs

A new mechanism is emerging that may raise funds to protect forests from deforestation, as well as mitigate climate change. This mechanism is known as "reduced emissions from deforestation and forest degradation" (REDD). As forests are destroyed for logging, mining, or oil and gas, the carbon stored in the trees is released as carbon dioxide, which adds to the concentration of greenhouse gases; 20 percent of global greenhouse gas emissions are thought to be from deforestation (Chatterjee 2009, p. 557). Lawmakers and businesspeople around the world are beginning to consider investing in REDD programs as a way to mitigate climate change. Under this type of program, developing countries would be paid to protect their forests and reduce emissions associated with deforestation. Funds would come from foundations, governments, or financial agencies such as World Bank; industries in developed countries would receive credits for saving trees in developing countries (Chatterjee 2009, p. 557). If REDD projects are able to generate revenue comparable to those of activities such as logging and agriculture, and revenues are distributed equally among stakeholders, this would give standing forests value and an incentive for forest conservation (Hajek *et al.* 2011, in press). REDD projects are emerging in many regions (Hajek *et al.* 2011, in press); however, we do not yet know the occurrence of these projects within the range of the blue-headed macaw and how successful these projects will be.

Another program being implemented is certification of forests. The basis for certification is for consumers to be assured by a neutral third party that forest companies are employing sound practices that will ensure sustainable forest management. By being certified, a company can differentiate their products and potentially acquire a larger share of the market (Duery and Vlosky 2005, p. 12). To be certified, companies must follow standards set by the Forest Stewardship Council (FSC). Certification companies not only certify forests, but also forest products that come from well managed forests and may also provide a means to track logs and remove illegally logged trees from

the market (Duery and Vlosky 2005, pp. 13–14; Kometter *et al.* 2004, p. 9). To date, more than 670,000 ha (1.6 million ac) of Peru's forest have achieved FSC certification (Rodriguez and Cubas 2010, p. 78). Bolivia has the largest area of FSC-certified tropical forests in the world; by the mid-2000s, Bolivia announced that 2.2 million ha (5.4 million ac) of humid tropical forests were certified (Killeen *et al.* 2007, p. 600; Duery and Vlosky 2005, p. 14). In 2004, Brazil announced that 1.2 million ha (2.9 million ac) of native Amazon forests and 1.0 million ha (2.4 million ac) of plantations were certified (WWF 2004, unpaginated). The FSC promotes "the equitable incorporation of social and environmental considerations when decisions are taken to manage forests. Under FSC certification, civil and indigenous rights are respected, areas of high social and environmental conservation value are maintained or enhanced, natural forests are not converted, highly hazardous pesticides and genetically modified trees are prohibited, and harvesting must meet national laws and international treaties." Furthermore, forests that are "FSC certified forest products" are verified from the forest of origin through the supply chain. The FSC label ensures that the forest products used are responsibly harvested and verified sources (FSC n.d., unpaginated).

In 2008, Peru announced its intention to reach zero deforestation within just 10 years. The Peruvian government stated that more than 80 percent of the country's primary forests could be saved or protected with about \$20 million U.S. dollars (USD) a year from the international community. However, there are major obstacles to achieving this goal. Additionally, Peru launched in 2010 its National Program for the Conservation of Forests and Mitigation of Climate Changes. This program aims to preserve 54 million hectares (133 million acres) of the 72 million hectares (178 million acres) of tropical forest in the Peruvian Amazon, although it is expected that the entire area consisting of 72 million hectares will be included (La Cruz 2010, unpaginated). Similarly, Brazil announced a plan to cut deforestation rates by 70 percent over the next 10 years with the help of international funding. Brazil's plan calls on foreign countries to find \$20 billion USD by 2021 (Painter 2008, unpaginated). All three countries have committed to protecting their forest resources in the future and have moved towards their goals to reach zero deforestation by certifying nearly 4 million ha (10 million ac) of forests.

There are many obstacles to overcome to reach these goals, including annual funding. If these programs are implemented and goals reached, deforestation in the Amazon will be significantly reduced.

#### Summary of Factor A

It is clear that the forests of the Amazon are being deforested for various economic activities, and deforestation rates have been increasing for several decades. How a species responds to this type and level of habitat disturbance depends on the preferences of the individual species, and the distance of undisturbed rainforest near disturbed areas. Many parrots are not habitat specialists and thrive in mosaics of different successional habitats. Many species of lowland forest habitat seem to do relatively well in modified human environments, as long as a mosaic of habitats in different successional stages is maintained and poaching and trapping are controlled (Snyder *et al.* 2000, p. 99).

Although we do not know the exact extent of current deforestation within the specific areas occupied by the blue-headed macaw, especially within Bolivia and Brazil where the species occurs just inside the countries' borders, there is no evidence that deforestation has impacted the blue-headed macaw. Ninety percent of this species' range is still forested. There is no evidence of a decline in the range or population and populations within Peru and Bolivia have remained healthy. At a minimum, the population numbers 11,500 individuals (including immature individuals), and this may be an underestimate as the entire global range has not been surveyed. Furthermore, blue-headed macaws at the Tambopata Research Center have been increasing since 2000, and sightings of the blue-headed macaw in Peru have increased over the last 10 years. Additionally, it has been found in a wide range of habitats, and is slightly more common in degraded habitats than pristine forests. The blue-headed macaw still occurs on the outskirts of Puerto Maldonado, Peru, one of the areas with significant disturbance, suggesting that this species is not greatly affected by anthropogenic pressures. Species experts have even suggested that the blue-headed macaw may increase with the spread of degraded forests along rivers.

Although there is evidence that forest habitat within the species range is subject to selective logging, the patchwork clearance as a consequence of logging may benefit the species. Furthermore, we found no information

that selective logging has adversely impacted the species. Additionally, road construction and related deforestation that are likely to affect the region in which the blue-headed macaw occurs is not likely to adversely affect the species. It is possible that individual blue-headed macaws may be affected by economic activities involving deforestation, such as logging, road development, agriculture and cattle ranching, oil and gas exploration, and mining, through the loss of food or nesting resources; however, we have no evidence to suggest that deforestation is affecting the blue-headed macaw to a degree that it is affecting the status of the species. Based on the best scientific and commercial information available, we find that deforestation from various economic activities, as discussed above, is not adversely impacting the blue-headed macaw and has not affected the range or status of the species. Additionally, we do not anticipate significant modification to the blue-headed macaw's habitat or curtailment of its range due to deforestation in the foreseeable future. A vast amount of the species' range has remained forested through current rates of deforestation. Significant amounts of the forests within Peru, Bolivia, and Brazil have been FSC-certified, indicating they are subject to sustainable harvesting, which may improve its habitat. Furthermore, all three countries have noted their commitment to protecting their forests, ensuring that harvest is done sustainably, and each has a goal of reaching zero deforestation within ten years. Some of the operations within the range of the blue-headed macaw that contribute to deforestation have smaller footprints than other extractive activities and require little land clearing (e.g., oil and gas operations and mining). Although increased deforestation is anticipated in Bolivia and Brazil, these areas represent only a small portion of the species' range. Therefore, based on the best scientific and commercial information available, we find that future deforestation from various economic activities, as discussed above, is not a threat to the status of the blue-headed macaw at this time.

We found no information suggesting that habitat loss is a current threat to this species or may become a threat to this species in the future such that it may contribute to the risk of extinction of this species. Therefore, based on the best available scientific and commercial information, we find that the present or threatened destruction, modification, or curtailment of habitat or range is not a threat to the blue-headed macaw in any

portion of its range now or in the foreseeable future.

#### *B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes*

Parrots, in general, are long-lived with low reproductive rates, traits that make them particularly sensitive to increased mortality (Lee 2010, p. 3; Thiollay 2005, p. 1121; Wright *et al.* 2001, p. 711). Hunting of parrots is widespread, and locals are known to hunt macaws at clay licks, which provide easy wait and shoot opportunities, for food and ornamental feathers (Tobias or Brightsmith 2007, p. 134). Logging operations are known to contribute to increased hunting in areas opened by the logging roads and subsequent settlements (Lee 2010, p. 3; Hume *et al.* 2006, p. 11; Fredericksen 2003, p. 11). However, there are no direct reports of hunters targeting the blue-headed macaw. Furthermore, hunters generally target larger species of macaw for food; since the blue-headed macaw is a small species, it is unlikely that it is targeted as a food source. Additionally, the feathers of this species have not been observed in local handicrafts, and therefore, it is likely not targeted for this purpose either (Tobias or Brightsmith 2007, p. 134).

Trapping parrots for the bird trade has occurred since pre-European times, as Amerindians valued macaws, parrots, and feather ornaments as ritualistic and trade objects (Snyder *et al.* 2000, pp. 98–99). Today, owning a wild parrot as a pet remains socially acceptable in most neotropical countries, even if it is illegal (Snyder *et al.* 2000, p. 99). Despite laws to protect wild parrots, the black market continues to supply a large part of the pet parrot trade in national and international markets. Illegal trade is thought to contribute to the threatened status of 66 parrot species worldwide, including 27 species in South America (Gastañaga *et al.* 2010, p. 1).

In 1981, the blue-headed macaw was listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). CITES is an international agreement between governments to ensure that the international trade of CITES-listed plant and animal species does not threaten species' survival in the wild. There are currently 175 CITES Parties (member countries or signatories to the Convention). Under this treaty, CITES Parties regulate the import, export, and reexport of specimens, parts, and products of CITES-listed plants and animal species (also see Factor D). Trade must be authorized through a system of permits and

certificates that are provided by the designated CITES Scientific and Management Authorities of each CITES Party (CITES 2010a, unpaginated).

In 2002, a CITES document proposed an uplisting of blue-headed macaw from Appendix II to Appendix I based on increasing numbers of blue-headed macaws in legal and illegal trade and the effects of trade on a species with low reproductive output (CITES 2002, pp. 1, 4–5). Sources cited in the document stated that the blue-headed macaw was offered in Brazilian markets by the hundreds, possibly originating from Peru, and was well known in Bolivian markets. Sources also stated that traders showed interest in buying more blue-headed macaws and for higher prices (CITES 2002, p. 4). Prices for blue-headed macaws were found to be very high, ranging from \$300 to 12,500 USD. Prices are set according to demand and may be influenced by the species' rarity. Wright *et al.* (2001 in CITES 2002, p. 3) found that prices above \$500 USD were significantly related to high poaching rates. In view of the significant interest in blue-headed macaws by aviculturist and commercial breeders, increased numbers of birds kept illegally, and the assumed high demand based on prices, capture pressure was believed to likely increase and have detrimental impacts to the species' survival due to the species' rarity, low reproductive rate, and limited distribution (CITES 2002, pp. 5–6).

In January 2003, the blue-headed macaw was uplisted to Appendix I of CITES. An Appendix-I listing includes species threatened with extinction whose trade is permitted only under exceptional circumstances, which generally precludes commercial trade. The import of an Appendix-I species requires the issuance of both an import and export permit. Import permits for Appendix-I species are issued only if findings are made that the import would be for purposes that are not detrimental to the survival of the species in the wild and that the specimen will not be used for primarily commercial purposes (CITES Article III(3)). Export permits for Appendix-I species are issued only if findings are made that the specimen was legally acquired and trade is not detrimental to the survival of the species in the wild, and if the issuing authority is satisfied that an import permit has been granted for the specimen (CITES Article III(2)). On the same day the blue-headed macaw was uplisted to Appendix I, the Philippines entered a reservation stating that it would not be bound by the provisions of CITES relating to trade of blue-headed macaws (CITES 2011,

unpaginated). A reservation means that the Philippines is treated as a non-CITES party with respect to the species concerned. Countries with CITES reservations may only trade with other countries that have the same reservation on the same species at the next level lower, in this case Appendix II. If both countries do not have a reservation on that species, then the animal remains on Appendix I.

Based on data obtained from United Nations Environment Programme–World Conservation Monitoring Center (UNEP–WCMC) CITES Trade Database, from the time the blue-headed macaw was uplisted to CITES Appendix I in January 2003 through 2009, 338 specimens of this species were reported in international trade. Of this total, 276 were live birds, 61 scientific specimens, and 1 body. In analyzing these reported data, several records appear to be over counts due to slight differences in the manner in which the importing and exporting countries reported their trade, and it is likely that the actual number of specimens of blue-headed macaws reported in international trade to UNEP–WCMC from 2003 through 2009 was 312, including 252 live birds, 59 scientific specimens, and 1 body. Of these specimens, 58 (19 percent) were reportedly exported into Mexico, Belgium, and South Africa from Peru (UNEP–WCMC 2011, unpaginated). With the information given in the UNEP–WCMC database, from 2003 through 2009 only 26 wild specimens of blue-headed macaws were reported in trade, and these were non-living specimens traded for scientific purposes; the other 286 specimens reported in trade (252 live birds, 33 scientific specimens, and 1 body) were captive-bred or captive-born specimens.

Through Resolution Conf. 8.4 (Rev. CoP15), the Parties to CITES adopted a process, termed the National Legislation Project, to evaluate whether Parties have adequate domestic legislation to successfully implement the Treaty (CITES 2010b, pp. 1–5). In reviewing a country's national legislation, the CITES Secretariat evaluates factors such as whether a Party's domestic laws designate the responsible Scientific and Management Authorities, prohibit trade contrary to the requirements of the Convention, have penalty provisions in place for illegal trade, and provide for seizure of specimens that are illegally traded or possessed. The Governments of Peru and Brazil were determined to be in Category 1, which means they meet all the requirements to implement CITES. Bolivia was determined to be in Category 2, meaning legislation does not meet the requirements to implement

CITES; however, Bolivia has submitted a CITES Legislation Plan and draft legislation to the Secretariat for comments ([www.cites.org](http://www.cites.org), SC59 Document 11, Annex p. 1). Generally this means that Bolivia has not completed all the requirements to effectively implement CITES. However, since the blue-headed macaw is listed as an Appendix-I species under CITES, commercial legal international trade is very limited. Because the majority of the specimens of this species reported in international trade (81 percent) are captive-bred or captive-born and the few wild specimens reported in trade were scientific specimens traded for scientific purposes, we believe that international trade controlled via valid CITES permits is not a threat to the species. In addition, Bolivia's category 2 status under the National Legislation Project does not appear to be impacting the blue-headed macaw.

There is evidence of a large market for national and international parrot trade, much of which involves illegally traded birds in Peru, Bolivia, and Brazil (Gastañaga *et al.* 2010, p. 5; Lee 2010, p. 12; Herrera and Hennessey 2007, pp. 296–297; Tobias and Brightsmith 2007, p. 134; CITES 2002, p. 4). One study found illegal trade of CITES Appendix-I and Appendix-II listed species, although the blue-headed macaw was not recorded (Herrera and Hennessey 2007, p. 298). In Peru, there are reports of trappers working unprotected clay licks the blue-headed macaw is known to use; however, it is not known whether the species was targeted or if it was actually caught (Tobias and Brightsmith 2007, p. 134). It was thought that foreign traders purchased blue-headed macaws in and around towns in Peru, Bolivia, and Brazil with an unverified report of “hundreds” passing through some Brazilian markets (CITES 2002 in Tobias and Brightsmith 2007, p. 134), but this report is from before the species was listed in CITES Appendix I in 2003. Three recent studies on domestic parrot trade found little to no evidence of blue-headed macaws being traded, and certainly not by the hundreds; one study found one report of two birds being present in a single market (Gastañaga *et al.* 2010, pp. 5–6; Brightsmith 2009, pers. comm.; Herrera and Hennessey 2007, pp. 298–299). It appears that although there may be some evidence of blue-headed macaws in the illegal pet bird trade, these numbers are likely low, as there is no solid supporting data that this species occurs in local markets in large quantities (Brightsmith 2009, pers. comm.), and furthermore, the report of

“hundreds” of blue-headed macaws in Brazilian markets referred to above occurred prior to the listing of the species in CITES Appendix I. What little illegal international trade may be occurring does not appear to have a significant impact on the blue-headed macaw, given a population ranging from 11,500 to 57,500 (Brightsmith 2009, pers. comm.).

#### Summary of Factor B

We found no evidence indicating that the blue-headed macaw is hunted as a food source or for ornamental feathers. Although trapping for the pet bird trade may have occurred in large numbers, we have no evidence that this is currently occurring. Since the CITES Appendix-I listing, legal commercial international trade has been very limited. Furthermore, recent studies of the parrot trade in Peru, Bolivia, and Brazil found no evidence of this species in markets, suggesting that illegal trade may only be occurring in small numbers, if at all, or is very well hidden. In addition, we are not aware of any information currently available that indicates the use of this species for any recreational or educational purpose. According to the WCMC Trade Database, from 2003 through 2009, 26 specimens were traded for scientific purposes. Given the estimated population size of 11,500–57,500 individuals, we find that trade for scientific purposes is insignificant. Based on the best available scientific and commercial information, we find that overutilization for commercial, recreational, scientific, or educational purposes is not a threat to the blue-headed macaw in any portion of its range now or in the foreseeable future.

#### C. Disease or Predation

Infectious diseases can pose many direct threats to individual birds, as well as entire flocks (Abramson *et al.* 1995, p. 287). Research on diseases affecting the blue-headed macaw specifically, either in captivity or in the wild, is lacking. Most of the available research on diseases in macaws and parrots address captive-held birds; information on the health of macaws in the wild is scarce (Karesh *et al.* 1997, p. 368). It is not clear how prevalent diseases which are common in birds held in captivity affect this species in the wild. Some of the common diseases in macaws are discussed below.

##### Proventricular Dilatation Disease

One serious disease that has been reported to infect psittacines is Proventricular dilatation disease (PDD), which is also known as avian bornavirus (ABV) or macaw wasting

disease. It is a fatal disease that poses a serious threat to domesticated and wild parrots worldwide, particularly those with very small populations (Kistler *et al.* 2008, p. 1; Abramson *et al.* 1995, p. 288). This contagious disease causes damage to the nerves of the upper digestive tract, so that food digestion and absorption are negatively affected. The disease has a 100-percent mortality rate in affected birds, although the exact manner of transmission between birds is unclear. In 2008, researchers discovered a genetically diverse set of novel ABVs that are thought to be the cause (Kistler *et al.* 2008, p. 1). The researchers developed diagnostic tests, methods of treating or preventing bornavirus infection, and methods for screening for the anti-bornaviral compounds (Kistler *et al.* 2008, pp. 1–15).

##### Psittacine Beak and Feather Disease

Psittacine beak and feather disease (Pbfd) has been documented in over 35 psittacine species, but all psittacines should be regarded as potentially susceptible (Abramson *et al.* 1995, p. 296). This viral disease, which originated in Australia, affects both wild and captive birds, causing chronic infections resulting in either feather loss or deformities of beak and feathers (Cameron 2007, p. 82). Pbfd causes immunodeficiency and affects organs such as feathers, the liver, and brain. Suppression of the immune system can result in secondary infections due to other viruses, bacteria, or fungi. The disease can occur without obvious signs (de Kloet and de Kloet 2004, p. 2,394). Birds usually become infected in the nest by ingesting or inhaling viral particles. Infected birds develop immunity, die within a couple of weeks, or become chronically infected. No vaccine exists to immunize populations (Cameron 2007, p. 82).

##### Newcastle's Disease

Newcastle's disease (ND) is a contagious and fatal viral disease that affects all species of birds, both domestic and wild (South Dakota Animal Industry Board (SD AIB) 2010, p. 2). Introduction of this disease to wild populations may come from infected birds in aviaries, although this is a low likelihood; exposure is more likely to come from infected domestic chickens or people carrying the disease on clothing and footwear (Styles *et al.* 2008, p. 93). ND affects the respiratory, nervous, and digestive systems. Symptoms include sneezing, gasping for air, nasal discharge, coughing, diarrhea, depression, tremors, drooping wings, paralysis, partial to complete drop in egg production, thin shelled eggs,

swelling of tissue around the eyes and in the neck, and sudden death (SD AIB 2010, p. 2; Abramson *et al.* 1995, p. 300). Once in a population, this disease can cause severe mortality (Styles *et al.* 2008, p. 93). This disease is classified as a Foreign Animal Disease in the United States. The U.S. Department of Agriculture, Animal and Plant Health Inspection Service requires that all imported birds be tested and quarantined for disease before entering the country. Birds illegally smuggled into the United States are not quarantined and, therefore, may introduce this disease to captive birds (SD AIB 2010, p. 4). There is no treatment for this disease (Abramson *et al.* 1995, p. 300).

##### Psittacosis

Psittacosis, also known as Parrot Fever, is an infection caused by the bacteria *Chlamydia psittaci*. An estimated 1 percent of all birds in the wild are infected and act as carriers. Those that live in a stable environment appear to have little complications from the disease; however, stress, due to the loss of food source or habitat, will invoke the disease (Jones 2007, unpaginated). In pet birds, psittacosis can cause ruffled feathers, depression, diarrhea, respiratory problems, loss of appetite, weight loss, and even death. This disease can be transferred to humans and cause mild flu-like infections or serious pneumonia. Psittacosis can be treated with antibiotics (Michigan Department of Agriculture 2002, pp. 1–2).

Although there are many diseases that could negatively affect macaws in captivity and in the wild, we are unaware of any information indicating that any of those diseases are impacting the blue-headed macaw at a level that may affect the status of the species as a whole and to the extent that it is considered a threat to the species (Brightsmith 2009, pers. comm.; World Parrot Trust 2009, pers. comm.).

##### Predation

Although the blue-headed macaw has not been recorded as the prey of other predators, there are various bird and mammal species found in the lowland forests of the Amazon that could potentially prey on macaws (CITES 202, p. 3). While feeding at clay licks, parrots are particularly vulnerable to raptors, especially those that can catch them in flight; eagles may be a potential predator, as other macaws have been observed leaving clay licks when an eagle approaches (Burger and Gochfeld 2003, pp. 33; CITES 2002, p. 3). Additionally, jaguars (*Panthera onca*)

could also prey on macaws, given the chance (Burger and Gochfeld 2003, pp. 33). In one study that found evidence of nest predation in tree cavities in Peru, the author suggested birds, such as toucans, arboreal mammals, such as monkeys, and possibly snakes are significant nest predators (Brightsmith 2005, p. 79). Although blue-headed macaws may be subject to predation, there is no evidence that this is occurring at a level that poses a threat to the species (Brightsmith 2009, pers. comm.; World Parrot Trust 2009, pers. comm.).

#### Summary of Factor C

We are not aware of any scientific or commercial information that indicates disease or predation poses a threat to this species. As a result, we find that disease and predation are not threats to the blue-headed macaw in any portion of its range now or in the future.

#### D. Inadequacy of Existing Regulatory Mechanisms

##### Peru

The blue-headed macaw is considered "vulnerable" by the Peruvian Government under Supreme Decree No. 034-2004-AG (2004, p. 276855). This Decree prohibits hunting, take, transport, and trade of protected species, except as permitted by regulation. We found that hunting and trade are not threats to the blue-headed macaw at this time (Factor B), possibly because this species may not be hunted due to its smaller size. In addition, this species has not been recently found in the domestic trade markets within its range, therefore, this regulation appears to be contributing to adequate protection against hunting and trade.

In 2000, Peru created a new Forest and Wildlife Law (Ley Forestal y de Fauna Silvestre No 27308) to govern the forestland and improve control of wildlife trade (Gastañaga *et al.* 2010, p. 2; Granoff 2008, p. 533). This law provides a regime for effective regulation of efficient and productive commercial forestry. Most notably, the law requires management plans for all forestry-related harvesting activities, including long-term plans and annual operating plans, which are submitted to Instituto Nacional de Recursos Naturales (INRENA), the Peruvian government organization in charge of the protection of flora and fauna of the country (Granoff 2008, p. 552; WWF 2006b, unpaginated). However, implementation is limited by the scarce resources of INRENA (Indian Country Today, 2007, unpaginated).

The Forest and Wildlife Law also regulates the commercialization of wild species, provides minimum requirements for their harvest, collection, and transportation, and establishes a maximum collection quota for each species from their natural environment (Gastañaga *et al.* 2010, p. 2). INRENA annually sets a quota for certain species, which is published in the government newspaper. In 2007 and 2008, there were seven parrot species listed for legal wildlife trade; however, trade in the blue-headed macaw was not permitted (Gastañaga *et al.* 2010, p. 2). As trade is not currently a threat to this species (Factor B), this regulation may contribute to adequate regulation of trade in this species.

Recent studies by the Peruvian Society for Environmental Law (SPDA) have concluded that there are approximately 5,000 laws and regulations directly or indirectly related to environmental protection and natural resource conservation in Peru. However, many of these are hindered by lack of resources and enforcement capabilities (Muller 2001, pp. 1-2). The forests of the Amazon, including forests in Peru, are being deforested for various economic activities, and deforestation rates have been increasing for several decades. In spite of this, we found that habitat loss as a result of deforestation has not been a threat to this species; therefore, it appears that although existing forest regulatory mechanisms are inadequate, the inadequacy of these mechanisms in Peru is not affecting the blue-headed macaw.

##### Bolivia

The 1975 Law on Wildlife, National Parks, Hunting and Fishing (Decree Law No. 12,301 1975, pp. 1-34) has the fundamental objective of protecting the country's natural resources. This law governs the protection, management, utilization, transportation, and selling of wildlife and their products; the protection of endangered species; habitat conservation of fauna and flora; and the declaration of national parks, biological reserves, refuges, and wildlife sanctuaries, tending to the preservation, promotion, and rational use of these resources (Decree Law No. 12,301 1975, pp. 1-34; Environmental Law Alliance 2003, p. 2). Although this law designates national protection for all wildlife, there is no information as to the actual protections this confers to the blue-headed macaw. Law No. 12,301 (1975, pp. 1-34) also placed into public trust all national parks, reserves, refuges, and wildlife sanctuaries. However, there is no specific information as to the governmental

protections afforded within the protected areas to either the blue-headed macaw or its habitat. Additionally, this regulation is very weak as it is 36 years old and the institutional framework has changed completely (Environmental Law Alliance 2003, p. 2). We found that hunting and trade are not threats to the blue-headed macaw at this time (Factor B); therefore, this regulation may contribute to adequate protection against unsustainable trade of the species.

Bolivia passed an overarching environmental law in 1992 (Law No. 1,333 1992), with the intent of protecting and conserving the environment and natural resources and promoting sustainable development (Environmental Law Alliance 2003, p. 1). Article 111 of this law states that all persons involved in unauthorized trade, capture, and transportation of wild animals are subject to a 2-year prison sentence and a fine equivalent to 100 percent of the value of the animal (Herrera and Hennessey 2007, pp. 295-296). However, there is no specific legislation to implement this law (Environmental Law Alliance 2003, p. 1). Nevertheless, we found that trade is not a threat to the blue-headed macaw at this time (Factor B); therefore, existing regulations may contribute to adequate protection against unsustainable trade.

Before 1996, timber companies were not required to write or use management plans and based their harvesting on selective extraction; this resulted in poor forest management, resource degradation, and a steep reduction in timber values (Duery and Vlosky 2005, p. 10). In 1996, Bolivia implemented a new Forestry Law (Ley Forestal No. 1700) to regulate the protection and sustainable use of forests and balance the interests of society and the economic and ecological health of the country (Duery and Vlosky 2005, p. 10). This law requires approved management plans and compliance with best management practices, including a 5-year forest management plan that incorporates forestry inventory data, timber stocking maps, and annual operation plans (Duery and Vlosky 2005, p. 10; Fredericksen 2003, p. 10). A typical forestry management plan subdivides the forest into parcels; one is used each year in a rotational system, typically providing for a 19-year regeneration period (Duery and Vlosky 2005, p. 10). Additionally, the Deforestation and Slash-and-Burn Plan that is part of this Forestry Law requires a payment to the forestry office for

slash-and-burn activities (Locklin and Haak 2003, p. 780).

In Bolivia, selective logging has been done at very low levels and with low human pressure, allowing them to remain largely intact (Fredericksen 2003, p. 10). Given that the species occurs just inside the border of Bolivia, and we found that habitat loss as a result of deforestation is not a threat to this species, it appears that the existing forest regulatory mechanisms in Bolivia may provide adequate protection for the blue-headed macaw.

#### Brazil

In 1998, Brazil passed the Environmental Crimes Law (Law No. 9605/98). Section I of this law details crimes against wild fauna, which include: the killing, harassment, hunting, capturing, or use of any fauna species without authorization (Clayton 2011, p. 4; UNEP, n.d., unpaginated). Additionally, except for the State of Rio Grande do Sul, commercial, sport, and recreational hunting are prohibited in Brazil. Penalties include a jail sentence of 6 months to 1 year, and/or a fine; the penalty is increased by half if the crime is committed under certain circumstances, including against rare species or those considered endangered, or within a protected area. However, it is not considered a crime to kill an animal when it is to satisfy hunger; to protect agriculture, orchards, and herds if authorized; or if the animal has been characterized as dangerous. This law also protects against other crimes involving the fauna species of Brazil. With respect to bird species, this law prohibits inhibiting reproduction without authorization; modifying or destroying nests or shelters; selling, offering, exporting, purchasing, keeping, utilizing, or transporting eggs, as well as products derived from fauna species without authorization; and introducing species into the country without license. Although this law provides protection to the fauna species of Brazil, it is more permissive than the prior law, the Fauna Protection Act (Law No. 5.197/1967), which provided more severe punishments (Clayton 2011, p. 4). We found that hunting and trade are not threats to the blue-headed macaw at this time (Factor B); therefore, this regulation may contribute to adequate protection against trade.

Section II of the Environmental Crimes Law details the crimes against flora, which include the destruction and damaging of forest reserves; cutting trees in forest reserves, causing fire in forests; extracting minerals from public forests or reserves without authorization; receipt of wood or vegetable products

for commercial or industrial purposes without requesting a copy of the supplier's license; polluting the environment at levels which may cause damages to the health of human beings, or death of animals or significant destruction of plants; and research or extraction of mineral resources without authorization. Penalties vary according to the crime and may be increased under certain circumstances; for example, the penalty may be increased by one sixth to one third if the crime results in a decrease of natural waters, soil erosion, or modification of climatic regime (Clayton 2011, p. 5; UNEP, n.d., unpaginated).

The Public Forests Management Law (Law No. 11284, 2006) was passed to protect and preserve forests that belong to the Federal, State, or local governments, with environmental, economic, and social benefits. This law is expected to help end illegal land occupation by delineating public forests (WWF 2006a, unpaginated); three management models are provided: creating conservation units (e.g., national forests), allocating forest areas for community use free of charge (e.g., forest settlements), and signing forest concession contracts (Patriota 2009, p. 615). The Brazilian government will open some forest areas under 40-year contracts to allow logging under a sustainable development plan. Logging is banned in nature reserves and indigenous lands (WWF 2006a, unpaginated).

In Brazil, there have been improvements in environmental legislation and public awareness; however, enforcement capabilities are lacking (Laurance *et al.* 2001, p. 309). The forests of the Amazon, including Brazil, are being deforested for various economic activities, and deforestation rates have been increasing for several decades. However, this species occurs just inside the border of Brazil and we found that habitat loss as a result of deforestation is not a threat to this species; therefore it appears that the inadequacy of existing forest regulatory mechanisms in Brazil is not affecting the blue-headed macaw.

#### Protected Areas

The Peruvian national protected area system includes several categories of habitat protection. Habitat may be designated as any of the following: (1) Parque Nacional (National Park, an area managed mainly for ecosystem conservation and recreation); (2) Santuario (Sanctuary, for the preservation of sites of notable natural or historical importance); (3) Reserva Nacional (National Reserve, for

sustainable extraction of certain biological resources); (4) Bosque de Protección (Protection Forest, to safeguard soils and forests, especially for watershed conservation); (5) Zona Reservada (Reserved Zone, for temporary protection while further study is under way to determine their importance); (6) Bosque Nacional (National Forest, to be managed for utilization); (7) Reserva Comunal (Communal Reserve, for local area use and management, with national oversight); and (8) Cotos de Caza (Hunting Reserve, for local use and management, with national oversight) (Rodríguez and Young 2000, p. 330). National reserves, national forests, communal reserves, and hunting reserves are managed for the sustainable use of resources (IUCN 1994, p. 2). The designations of National Parks, Sanctuaries, and Protection Forests, are established by supreme decree that supersedes all other legal claim to the land and, thus, these areas tend to provide more habitat protection. All other protected areas are established by supreme resolution, which is viewed as a less powerful form of protection (Rodríguez and Young 2000, p. 330).

Peru has 8 national parks and 41 additional protected areas (Chatterjee 2009, p. 558). The blue-headed macaw has been recorded in at least 6 of these areas: Cordillera Azul National Park (Loreto, Huancayo, and Ucayali); Manu National Park (Madre de Dios and Cuzco); Alto Purús Communal Reserve and National Park (Madre de Dios); Los Amigos Conservation Concession (Madre de Dios); Tambopata National Reserve (Madre de Dios); and Bahuajá-Sonene National Park (Madre de Dios) (Tobias and Brightsmith 2007, p. 134).

In Bolivia, habitat is protected either on the national or departmental level through the following designations: (1) Parque (Park, for strict and permanent protection of representative of ecosystems and provincial habitats, as well as plant and animal resources, along with the geographical, scenic and natural landscapes that contain them); (2) Santuario (Sanctuary, for the strict and permanent protection of sites that house endemic plants and animals that are threatened or in danger of extinction); (3) Monumento Natural (Natural Monument, to preserve areas such as those with distinctive natural landscapes or geologic formations, and to conserve the biological diversity contained therein); (4) Reserva de Vida Silvestre (Wildlife Reserve, for protection, management, sustainable use and monitoring of wildlife); (5) Área Natural de Manejo Integrado (Natural Area of Integrated Management, where

conservation of biological diversity is balanced with sustainable development of the local population; and (6) Reserva Natural de Inmovilización (“Immobilized” Natural Reserve, a temporary (5-year) designation for an area that requires further research before any official designations can be made and during which time no natural resource concessions can be made within the area) (Supreme Decree No. 24,781 1997, p. 3). Within parks, sanctuaries and natural monuments, extraction or consumption of all resources are prohibited, except for “scientific research, eco-tourism, environmental education, and activities of subsistence of original towns, properly described and authorized.” National protected areas are under the management of the national government, while departmental protected areas are managed at the department level (eLAW 2003, p. 3; Supreme Decree No. 24,781 1997, p. 3).

There are 22 protected areas in Bolivia covering 24 percent of its territory (Byers and Israel 2008, p. vi; Fredericksen 2003, p. 10). The blue-headed macaw has been recorded in at least two of these areas: Madidi National Park (La Paz) and Reserva Nacional Amazonica Manuripi-Heath (Pando) (Tobias and Brightsmith 2007, p. 134).

There are various regulatory mechanisms (Law No. 11.516, Act No. 7.735, Decree No. 78, Order No. 1, Act No. 6.938) in Brazil that direct Federal and State agencies to promote the protection of lands and that govern the formal establishment and management of protected areas to promote conservation of the country’s natural resources (ECOLEX 2007, pp. 5–7). These mechanisms generally aim to protect endangered wildlife and plant species, genetic resources, overall biodiversity, and native ecosystems on Federal, State, and privately owned lands (e.g., Law No. 9.985, Law No. 11.132, Resolution No. 4, Decree No. 1.922). Brazil’s formally established protection areas were developed in 2000 and are categorized based on their overall management objectives. These include national parks, biological reserves, ecological reserves, ecological stations, environmental protection areas, and national forests (Rylands and Brandon 2005, pp. 612–618). These areas allow varying uses and provide varying levels of protection for specific resources (Costa 2007, pp. 5–19). For example, Biological Reserves are restricted to a greater extent than the National Parks. Official uses of reserves include scientific study, environmental monitoring, and scientific education (Costa 2007, p. 9).

There are 84 decreed protected areas within Rondônia, Brazil alone, covering 45 percent of the territory (Ribeiro *et al.* 2005, p. 1). The blue-headed macaw has been recorded in one protected area, the Serra do Divisor National Park, in Acre (Tobias and Brightsmith 2007, p. 134).

In summary, the blue-headed macaw occurs in at least 10 major protected areas, covering a combined 110,216 km<sup>2</sup> (42,554 mi<sup>2</sup>), or 18.7 percent of its global range, although this does include large areas of unsuitable habitat within three of the protected areas (Tobias and Brightsmith 2007, p. 134). In Peru, the Alto Purús Communal Reserve and National Park is surrounded by other important protected areas, including Manu National Park and the Tambopata Reserve and Bahuaja Sonene National Park; combined with Brazil’s and Bolivia’s important natural protected areas close to the border with Peru, these areas constitute an important protected corridor in South America (ParksWatch 2003, p. 17).

Studies have shown that protected areas have been successful in providing protection from poaching, logging, and other forest damage, especially when compared to unprotected areas (Lee 2010, p. 3; Killeen *et al.* 2007, p. 603; Oliveira *et al.* 2007, p. 1234; Asner 2005, p. 480; Ribeiro *et al.* 2005, p. 2; Gilardi and Munn 1998, p. 641). There is evidence of some habitat destruction within protected areas, including resource extraction, and information to suggest habitat destruction within protected areas is a potential future threat, especially when in close proximity to roads and subsequent settlements and agriculture and pasture conversion (Upper Amazon Conservancy 2010, unpaginated; Chatterjee 2009, p. 557; Cabieses 2009, p. 26; Killeen *et al.* 2007, p. 603; Oliveira *et al.* 2007, p. 1233; Ribeiro *et al.* 2005, pp. 1–2; ParksWatch 2005a, unpaginated; Fredericksen 2003, p. 10; CITES 2002, p. 7).

A number of conservation organizations have developed programs to support the protected areas of Peru. The Wildlife Conservation Society is executing a wide range of projects aimed at strengthening the management of Madidi National Park. This program is based on three main actions: (1) Park management, (2) natural resources management, and (3) scientific research (ParksWatch 2005a, p. 35). CARE-Bolivia has also implemented projects to raise local awareness on the importance of watershed protection and sustainable agricultural practices. Additionally, CARE-Bolivia and the Wildlife Conservation Society collaborated on the park’s management plan, organized

specific training courses for park rangers, and donated basic management equipment (ParksWatch 2005a, p. 38). Also, since the Tambopata Reserve and Bahuaja Sonene National Park was created, a series of conservation and research projects have been developed, including, among others, Rainforest Expeditions’ Macaw Ecological Research Project (ParksWatch 2002, p. 7). The projects carried out by these organizations will help conserve the habitat of the park and will ultimately benefit the blue-headed macaw.

We found no evidence that habitat destruction within protected areas is a threat to this species now or in the foreseeable future; therefore, it appears that the inadequacy of existing regulatory mechanisms for protected areas in Peru, Bolivia, and Brazil are not adversely affecting the blue-headed macaw.

#### International Wildlife Trade

The European Union (EU) Wildlife Trade Regulation (Council Regulation No. 338/97) went into effect in 1997. The purpose of this regulation is to protect wild animals and plants currently or likely to become threatened by international trade by regulating trade in these species (UNEP–WCMC n.d., unpaginated). The blue-headed macaw is listed under Appendix A (Council Regulation No. 709/2010 amending No. 338/97). Appendix A includes species listed under CITES Appendix I or species that may be in demand for utilization in the EU or for international trade, and which is either threatened with extinction or so rare that any level of trade would imperil the survival of the species (Article 3(1)(a), (b)). Additionally, there has been an EU import suspension for the blue-headed macaw from Bolivia since 1986 and from Brazil since 1988 (Article 4.6(b) (CITES 2002, p. 3; UNEP–WCMC n.d., unpaginated). As discussed under Factor B, we do not consider international trade to be a threat impacting this species. Therefore, protection under this Regulation is an adequate regulatory mechanism.

The blue-headed macaw is listed in Appendix I of CITES. CITES is an international treaty among 175 nations, including Peru, Bolivia, Brazil, and the United States, entered into force in 1975. In the United States, CITES is implemented through the U.S. Endangered Species Act of 1973, as amended. The Secretary of the Interior has delegated the Department’s responsibility for CITES to the Director of the Service and established the CITES Scientific and Management Authorities to implement the treaty. Under this

treaty, member countries work together to ensure that international trade in animal and plant species is not detrimental to the survival of wild populations by regulating the import, export, and reexport of CITES-listed animal and plant species. As discussed under Factor B, we do not consider international trade to be a threat impacting this species. Therefore, protection under this Treaty is an adequate regulatory mechanism.

The import of blue-headed macaws into the United States is also regulated by the Wild Bird Conservation Act (WBCA) (16 U.S.C. 4901 *et seq.*), which was enacted on October 23, 1992. The purpose of the WBCA is to promote the conservation of exotic birds by ensuring that all imports to the United States of exotic birds is biologically sustainable and is not detrimental to the species. The WBCA generally restricts the importation of most CITES-listed live or dead exotic birds except for certain limited purposes, such as zoological display or cooperative breeding programs. Import of dead specimens is allowed for scientific specimens and museum specimens. The Service may approve cooperative breeding programs and subsequently issue import permits under such programs. Wild-caught birds may be imported into the United States if they are subject to Service-approved management plans for sustainable use. At this time, the blue-headed macaw is not part of a Service-approved cooperative breeding program and does not have an approved management plan for wild-caught birds.

International trade was significantly reduced during the 1990s as a result of tighter enforcement of CITES regulations, stricter measures under EU legislation, and adoption of the WBCA, along with adoption of national legislation (Snyder *et al.* 2000, p. 99). As discussed under Factor B, we found that commercial legal international trade has been very limited and illegal trade currently occurs in small numbers, or is very well hidden. Taking into consideration the restrictions under the EU Wildlife Trade Regulation, CITES, and WBCA, and the lack of evidence for this species occurring in substantial numbers in the illegal pet bird trade, we believe that these regulation are adequately protecting the species from international trade.

#### Summary of Factor D

We found no evidence that hunting or trade poses threats to the blue-headed macaw; therefore, existing regulatory mechanisms addressing these activities may be providing adequate protection for this species. As discussed under

Factor A, some deforestation, oil and gas exploration and extraction, mining, and infrastructure plans may occur in forests in Peru, and perhaps within the limited range of this species in Bolivia and Brazil. However, we found that habitat loss as a result of any of those activities is not a threat to this species in any portion of its range now or in the foreseeable future; therefore, it appears that the existing forest regulatory mechanisms throughout the range of this species is not adversely affecting the blue-headed macaw.

#### *E. Other Natural or Man-Made Factors Affecting the Species' Continued Existence*

We are not aware of any scientific or commercial information that indicate other natural or man-made factors pose a threat to this species. As a result, we find that other natural or man-made factors are not threats to the blue-headed macaw in any portion of its range now or in the future.

#### **Finding**

As required by the Act, we conducted a review of the status of the species and considered the five factors in assessing whether the blue-headed macaw is endangered or threatened throughout all or a significant portion of its range. We examined the best scientific and commercial information available regarding the past, present, and future threats faced by the blue-headed macaw. We reviewed the petition, information available in our files, and other available published and unpublished information.

In considering whether a species may warrant listing under any of the five factors, we look beyond the species' exposure to a potential threat or aggregation of threats under any of the factors, and evaluate whether the species responds to those potential threats in a way that causes an actual impact to the species. The identification of threats that might impact a species negatively may not be sufficient to compel a finding that the species warrants listing. The information must include evidence indicating that the threats are operative and, either singly or in aggregation, affect the status of the species. Threats are significant if they drive, or contribute to, the risk of extinction of the species, such that the species warrants listing as endangered or threatened, as those terms are defined in the Act.

We evaluated the potential threats to the blue-headed macaw, including habitat loss, national and international trade, disease and predation, inadequate regulatory mechanisms, and other

natural or manmade factors such as climate change. We found no evidence that this species is being hunted. Legal international trade of this species has been very limited and most of the birds involved were captive-bred. We also found that illegal trade, disease, and predation were not threats to this species. We had no information on other natural or man-made factors on which to evaluate the effects on the blue-headed macaw.

As discussed under Factor A, logging, illegal logging, agriculture, ranching, slash-and-burn activities, oil and gas exploration and extraction, and illegal mining are occurring in Peru, and potentially in the area just inside the borders of Bolivia and Brazil, and deforestation rates have continued to increase in those countries. The best available scientific and commercial information indicates that although these activities could affect individuals of this species, it does not appear that these activities are affecting the species at the population level. We did not find information that the extent of future deforestation or the potential impacts to this species will occur at a level that will elicit a species-level response and contribute to the risk of extinction of the species. All of the range countries of the blue-headed macaw have laws and regulations to protect the species, or wildlife in general, and habitat. Existing regulatory mechanisms have not impacted the species such that it rises to a level that it would be considered a threat to the continued existence of the species.

Based on the lack of threats of sufficient imminence, intensity, or magnitude acting on this species, we find that the blue-headed macaw is not in danger of extinction (endangered), or likely to become endangered within the foreseeable future (threatened), throughout all of its range. Therefore, we find that listing the blue-headed macaw as a threatened or endangered species is not warranted throughout all of its range.

We request that you submit any new information concerning the status of, or threats to, the blue-headed macaw or its habitat to our Branch of Foreign Species (see **ADDRESSES**) whenever it becomes available. New information will help us monitor this species and encourage its conservation.

#### *Significant Portion of the Range*

Having determined that the blue-headed macaw is not in danger of extinction or likely to become so within the foreseeable future throughout all of its range, we must next consider whether there are any significant



portions of the range where the blue-headed macaw is in danger of extinction or is likely to become endangered in the foreseeable future.

The Act defines an endangered species as one “in danger of extinction throughout all or a significant portion of its range,” and a threatened species as one “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” The term “significant portion of its range” is not defined by the statute. For the purposes of this finding, a portion of a species’ range is “significant” if it is part of the current range of the species and it provides a crucial contribution to the representation, resiliency, or redundancy of the species. For the contribution to be crucial it must be at a level such that, without that portion, the species would be in danger of extinction or likely to become so in the foreseeable future.

In determining whether a species is threatened or endangered in a significant portion of its range, we first identify any portions of the range of the species that warrant further consideration. The range of a species can theoretically be divided into portions in an infinite number of ways. However, there is no purpose to analyzing portions of the range that are not reasonably likely to be significant and threatened or endangered. To identify only those portions that warrant further consideration, we determine whether there is substantial information indicating that: (1) The portions may be significant, and (2) the species may be in danger of extinction there or likely to become so within the foreseeable future. In practice, a key part of this analysis is whether the threats are geographically concentrated in some way. If the threats to the species are essentially uniform throughout its range, no portion is likely to warrant further consideration. Moreover, if any concentration of threats applies only to portions of the species’ range that clearly would not meet the biologically based definition of “significant” (*i.e.*, the loss of that portion clearly would not reasonably be expected to increase the vulnerability to extinction of the entire species to the point that the species would then be in danger of extinction or likely to become endangered in the foreseeable future), such portions will not warrant further consideration.

If we identify portions that warrant further consideration, we then determine their status (*i.e.*, whether in fact the species is endangered or threatened in a significant portion of its range). Depending on the biology of the

species, its range, and the threats it faces, it might be more efficient for us to address either the “significant” question first, or the status question first. Thus, if we determine that a portion of the range is not “significant,” we do not need to determine whether the species is endangered or threatened there; if we determine that the species is not endangered or threatened in a portion of its range, we do not need to determine if that portion is “significant.”

Applying the process described above for determining whether a species is threatened in a significant portion of its range, we considered status first to determine if any threats or potential threats acting individually or collectively threaten or endanger the species in a portion of its range. We have analyzed the potential threats to the blue-headed macaw throughout its range and found that they occur at such a low level that there is no effect to the species.

#### Conclusion of 12-Month Finding

We do not find that the blue-headed macaw is in danger of extinction now, nor is it likely to become endangered within the foreseeable future, throughout all or a significant portion of its range. Therefore, listing the species as endangered or threatened under the Act is not warranted at this time. We request that you submit any new information concerning the status of, or threats to, the grey-cheeked parakeet to our Endangered Species Program, Branch of Foreign Species (see **ADDRESSES**) whenever it becomes available. New information will help us monitor this species and encourage its conservation. If an emergency situation develops for the grey-cheeked parakeet or any other species, we will act to provide immediate protection.

## II. Grey-Cheeked Parakeet (*Brotogeris pyrrhoptera*)

### A. Species Description

The grey-cheeked parakeet (*Brotogeris pyrrhopterus* synonym *Psittacus pyrrhopterus*) belongs to the family Psittacidae, and is one of 8 recognized species within its genus, with 17 recognized subspecies (Ribas *et al.* 2009, p. 1713; Juniper and Parr 1998, p. 490; Collar 1997; Forshaw 1989).

This species is characteristically recognized by its distinctive grey-cheeks. It is also known as a pocket parrot. Adults primarily have green plumage with pale yellow on their under parts. The forehead is grey with a blue-green crown. The side of its head and chin is pale grey and it has a slight

brown tinge on lesser and median wing-coverts. Its primary covert feathers are dark blue; under wing coverts and axillaries are orange. Its interior feathers are narrowly edged with yellow, and the legs are pale pink (Forshaw 1989).

The grey-cheeked parakeet is endemic to southwestern Ecuador and northwestern Peru (Nores 2004, p. 1; Best *et al.* 1993). It occurs primarily in forests in a narrow dry band of habitat known as the Tumbesian (also known as Tumbesian) Region (Best *et al.* 1996 p. 69; Best and Kessler 1995, p. 8, 155; Parker *et al.* 1995, p. 202). This region has distinct ecological characteristics (Nores 2004, p. 149) based on drier climate and local terrain. The grey-cheeked parakeet prefers dry, deciduous forests dominated by *Ceiba trichistandra* (Kapok or Ceibo tree) (Williams and Tobias 1994 in Best *et al.* 1995, p. 237; IUCN 2008g). Smaller numbers have been seen in semihumid forest as well as fragmented forests, arid scrubland, and semi-open agricultural land where remnant stands of larger trees that are suitable for nesting are present (Forshaw 1989, p. 531). This area is unique because it is at the equator; its climate is influenced by the Humboldt current, and its natural boundary is defined by the Pacific Coast and the Andes mountains (ParksWatch 2005b, p. 3). To the north and south of this climate zone are the Chocó wet forest and the Peruvian coastal desert. Three to nine months of the year are arid (Best and Kessler 1995, p. 27). In El Niño years, which occur at 3–16-year intervals, rainfall may be 200 times as high as a very dry year (World Wildlife Fund (WWF) 2007). The significant biodiversity in this region has been recognized for many years (ParksWatch 2005b, p. 3). Conservation International, WWF, and BLI all consider this region to be globally important due to the high level of endemic species that exist here.

Although this species’ potential range is estimated to be 9,300 km<sup>2</sup> (3,591 mi<sup>2</sup>) (BLI 2011b, p. 1), it does not occur throughout its potential extent of occurrence. Within this area, its actual area of occurrence is confined to suitable habitat, which contains areas for nesting, breeding, and feeding. It occurs in the lowlands, generally from sea level to 300 meters (984 ft), but has been observed as high as 1,550 m (5,085 ft) in the southern part of its range (Best *et al.* 1992 in Best *et al.* 1995, p. 241). In 1964, Brosset (1964, pp. 112–134) reported it as being very common in southwestern Ecuador; he described large flocks that were seen in the vicinity of banana plantations.

In Ecuador, this species has been documented west of the Andes in the

Chone River district (Forshaw 1989, p. 531). In the early 2000s, it was observed in the areas of Achiotos, El Faique, Mangaurquillo, Manabi, Progreso, Guayas, Los Rios, and El Oro, and in the Sozoranga area of Loja (Bonaccorso *et al.* 2006, p. 63; Freile *et al.* 2004, pp. 18–19; Ridgely and Greenfield 2001, p. 67). In addition to its native habitat, this species has also been observed in urbanized areas (Ridgely and Greenfield 2001, p. 67). It is found in El Canclón Lagoon, which was declared a Ramsar site in 1996, and which is one of the 32 identified wetlands in Ecuador's coastal region (Alava *et al.* 2007, p. 224). It has also been observed in three protected areas in southwestern Ecuador: the Cerro Blanco Protected Forest (Sheets 2005, personal observation; Pople *et al.* 1996, p. 3), Manglares Churute Ecological Reserve (MCER), and Arenillas Military Reserve (Best *et al.* 1995, p. 241), which shares a small portion of its border with Peru. MCER, within Guayas Province, was created in 1979 and consists of 35,000 ha (86,487 acres (ac)) 40 km (25 mi) south of Guayaquil (Pobles *et al.* 1996, p. 3). MCER consists of mangrove stands, a salt-flat area, and a forested section. Cerro Blanco Reserve, within Guayas Province, is 2,000 ha (4,942 ac). In 1995, it was described as a small area of semi-evergreen forest on a ridge. It is managed by Fundación Natura and Fundación Pro-Bosque. The Arenillas Military Reserve is 17,083 ha (42,213 ac) in area and has limited access. It is managed by military personnel and requires prior authorization from the Ministry of Defense to enter (<http://www.ambiente.gov.ec>, accessed June 14, 2011).

In northwest Peru, this species is reported to be locally common in lowland dry deciduous forest (Walker 2001, p. 6; Parker *et al.* 1995, p. 212; Parker *et al.*, 1982). In 1995, this species was described as being scarce at Campo Verde and Cotrina, Peru (Parker *et al.* 1995, p. 212). This species has been observed in the Tumbes Reserved Zone (TRZ), specifically at El Caucho and Quebrada Faical, with daily counts of between 50 and 120 individuals (Best *et al.* 1995, pp. 241, 242; Parker *et al.* 1995, p. 212). TRZ is a part of the Northeast Biosphere Reserve (NBR) which covers 231,402 ha (571,807 ac), and includes the Cerros de Amotape National Park and El Angulo Hunting Preserve (Walker 2001, p. 1). In the late 1980s and historically, this species was documented as common in the NBR, Tumbes Department (Best *et al.* 1995, p. 242; Wiedenfeld *et al.* 1985, p. 313). The TRZ was formerly designated as the

Tumbes National Forest (ParksWatch 2005b, p. 6), and was established in 1957 to protect against overharvest of forest products (ParksWatch 2005b, p. 12). It is somewhat more protected than it was in the past due to changes at the border that have resulted from the Peace Agreement between Peru and Ecuador, and the subsequent decrease in the pressures on the TRZ for natural resources due to fewer human inhabitants in the area (Walker 2001, p. 2).

The most recent population estimate is prior to 1995, when it was estimated that there were 15,000 mature individuals of this species remaining in the wild, principally in Ecuador (BLI 2011b, p. 1; Best *et al.* 1995, p. 242). At that time, the population was estimated to have experienced approximately a 70 percent population decline over 10 years (BLI 2011b, p. 1). This is significant for two reasons: this estimate was made only shortly after the enactment of regulatory mechanisms such as the implementation of trade bans, and the estimate was also done only a few years after trade restrictions were put in place through the WBCA. The population information prior to 1995 does not likely represent the current status because regulatory measures, particularly the implementation of CITES and WBCA, are currently in place which have mitigated international trade, the major threat to this species. Additionally, in 1991, the European Union banned the import of this species (Best *et al.* 1995, p. 234). International trade data indicates that trade has dramatically decreased.

There are several recent reports that describe this species as common; large flocks have recently been observed in many areas within its range (WorldLand Trust 2011, p. 2; Woods 2010, p. 34; Van den Schoor 2007, p. 12; Elwonger *et al.* 2004, pp. 3, 20). A local report (2007) documented this species in Guayas in the Reserva Ecologica Manglares-Churute (<http://www.xeno-canto.org>, Accessed September 28, 2011). It is consistently seen in flocks on birding trips (Denton 2009; Coopmans *et al.*, 2006; Coopmans 2005) in Southern Ecuador. In Cerro Blanco Protected Forest (BPCB), which is 14 km (8.7 mi) west of Guayaquil, Ecuador, this species was described as abundant in 1996, with flocks of up to 40 observed (Pople *et al.* 1996, p. 2). This area is owned by La Cemento Nacional, Ecuador's national cement company, but the reserve has been managed by the NGO Fundación Pro-Bosque since 1993 (Pople 1996, p. 1). In 1996, this species was also observed in another area 25 km

(15.5 mi) northwest of BPCB consisting of 600 ha (1,483 ac) known as Hacienda Gonzalez, also owned by La Cemento Nacional, that was established as a forest reserve. This species was described as not as abundant in this reserve as in BPCB (Pople 1996, p. 2). However, as of 2000, it was reported to be still locally common in suitable habitat remnants within its range (Juniper and Parr 1998 in BLI 2011b, p. 1).

Additionally, various bird surveys are conducted periodically in Peru and Ecuador to determine presence and absence in areas, and to conduct counts of birds observed (Van den Schoor 2007, p. 12; Elwonger *et al.* 2004, p. 20; Walker 2001, p. 5). In 2001, a birding trip to the TRZ encountered groups of between 5 and 30 of this species and described the occurrence of this species as being common (Walker 2001, p. 5). This species was also described as being fairly common during a birding trip in the Quebrada Faical area of the TRZ in November and December 2004 (Elwonger *et al.* 2004, pp. 3, 20). In 2006, over 60 birds were observed in the wild (Van den Schoor 2007, p. 12). Although there is no current estimate of this species' population size, there are several recent reports describing this species as common; large flocks have recently been observed in many areas within its range (WorldLand Trust 2011, p. 2; Woods 2010, p. 34; Van den Schoor 2007, p. 12; Elwonger *et al.* 2004, pp. 3, 20; Denton 2009; Coopmans *et al.*, 2006; Coopmans 2005). It is commonly found in at least four reserves in Ecuador, and one in Peru. In 2003 and 2007, it was documented in Loja, Ecuador, where it had been described as scarce during 1990–1991 surveys (Spencer, pers. comm.; Williams and Tobias 1994 in Best *et al.* 1995, p. 242). An additional consideration in their population is their larger clutch size. Because they generally lay between 4–6 eggs ([http://www.greycheekparakeet.com/Genus\\_brotogeris.html](http://www.greycheekparakeet.com/Genus_brotogeris.html), accessed August 22, 2011), they have a higher reproductive potential than those species that have a clutch size of 1–2 eggs.

Unlike other species within the *Brotogeris* genus, the grey-cheeked Parakeet does not generally congregate in large flocks. Flocks of 4 to 10 birds normally are observed (Freile *et al.* 2004), and they will sometimes flock with other species (Best *et al.* 1995, p. 243). *Brotogeris* species primarily nest higher in the canopy (Brightsmith 2000, p. 529). They lay between 4 and 6 eggs, with 5 eggs usually observed (Arndt 1986 in Best *et al.* 1986, p. 243). Their average life span is thought to be

approximately 15 years (Brouwer *et al.* 2000, pp. 299–316).

Because parrots feed primarily on fruits and flowers, they are linked to the fruiting and flowering patterns of trees. It is thought to be a seasonal migrant, based on food availability (Parker *et al.* 1995, p. 212). This species is a food generalist, consuming petals, seeds, flowers, and fruits, particularly bananas (Juniper and Parr 1998, p. 490). Fluctuations in abundance and availability of food sources may change this species' diet, resulting in movements to areas with greater food availability, and influencing local seasonal patterns of bird abundance (Lee 2010, p. 7; Brightsmith 2006, p. 2; Renton 2002, p. 17; Cowen undated, pp. 5, 23).

This species exhibits preference for a variety of nesting substrates, but primarily nests in tree cavities (Juniper and Parr 1998, p. 490; Forshaw 1989, p. 532; Berg *in litt.* in Best *et al.* 1985, p. 243). It prefers larger trees with larger potential cavity size for its nests. The grey-cheeked parakeet is known to form nests in arboreal termite nests (termateria) (Brightsmith 2000, p. 530). Termites do not seem to be disturbed by avian nesting behavior (Brightsmith 2000, p. 531; Harris 1985 in Best *et al.* 1985, p. 243). The species has also been observed laying eggs on decaying wood and moist moss in hollow tree limbs and trunks (Harris 1985 in Best *et al.* 1985, p. 243). It shows preference for particular tree species, such as: *Erythrina* (coral erythrina), *Bombax* (cotton tree), *Chorisa* or *Ceiba* (silk-floss), *Cavanillesia platanifolia* (macondo, cuipo, or hamelí), *Ficus* (fig), and *Cecropia* (trumpet tree) (Parker *et al.* 1995, p. 212; Best *et al.* 1985, p. 243).

#### Conservation Status

This species is listed as endangered by the IUCN. This categorization was primarily based on rapid rates of population decline caused by past trapping for the pet trade (IUCN 2011, p. 1). IUCN's website states that "this species qualifies as endangered because it [was] affected by very rapid rates of population decline caused by trapping for the cagebird trade, plus habitat loss. Future population declines are projected to be slower, but still a serious cause for concern." However, this is primarily based on information compiled by Birdlife International, which relies heavily on information from before 1995. Note that IUCN rankings do not confer any actual protection or management. This species has been listed in Appendix II of CITES since 1981; it is listed on Appendix I of the Convention on Migratory Species

(CMS or Bonn Convention); and it is protected by the WBCA. It is listed as vulnerable in Peru (Peru Lista oficial del Instituto Nacional de Recursos Naturales 2011, p. 2; Supreme Decree No. 034–2004–AG 2004, p. 276855), and it is also considered vulnerable by the Ecuador Government (Decree No. 3,516 of 2003; Unified Text of the Secondary Legislation of the Ministry of Environment (EcoLex 2003b, pp. 1–2 and 34). Additionally, in 1991, the European Union (EU) banned the import of *B. pyrrhopterus* from Peru (Best *et al.* 1995, p. 234). The EU ban and the implementation of the WBCA effectively halted the international trade in this species, which was the largest driver of its population decline (BLI 2011, p. 1; Best *et al.* 1995, pp. 234–235).

#### Summary of Factors Affecting the Grey-Cheeked Parakeet

Potential factors that were suggested to affect the species or its habitat or range are evaluated in this section, including: (1) Trapping for the pet trade; (2) habitat destruction, primarily through logging, conversion to agricultural areas, and gravel extraction; (3) disease or predation; and (4) El Niño events. Information pertaining to the grey-cheeked parakeet in relation to the five factors provided in section 4(a)(1) of the Act is discussed below. In making these findings, information pertaining to each species in relation to the five factors provided in section 4(a)(1) of the Act is discussed below. In considering what factors might constitute threats to a species, we must look beyond the exposure of the species to a particular factor to evaluate whether the species may respond to the factor in a way that causes actual impacts to the species. If there is exposure to a factor and the species responds negatively, the factor may be a threat, and during the status review, we attempt to determine how significant a threat it is. The threat is significant if it drives or contributes to the risk of extinction of the species such that the species warrants listing as endangered or threatened as those terms are defined by the Act. However, the identification of factors that could impact a species negatively may not be sufficient to compel a finding that the species warrants listing. The information must include evidence sufficient to suggest that the potential threat has the capacity (i.e., it should be of sufficient magnitude and extent) to affect the species' status such that it meets the definition of endangered or threatened under the Act.

#### A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Habitat loss was indicated to be a factor affecting this species (BLI 2011, p. 1). Although habitat loss can be one of the most significant threats to wildlife, particularly in developing countries, the best available information does not indicate that habitat loss is negatively affecting this species as discussed below. This species exists primarily in southwest Ecuador and northwest Peru (Gastañaga *et al.* 2011, p. 1; BLI 2011, p. 1; Alava *et al.* 2007, p. 1; Bonaccorso *et al.* 2007, p. 61). In Peru, at the border of Peru and Ecuador, this species exists primarily in a protected area, the Tumbes Reserved Zone (TRZ). Forms of deforestation occur in and around the TRZ and include timber extraction, gravel extraction, encroachment, honey harvest, and roads (ParksWatch 2005b, pp. 8–9, 12). In addition, the park boundaries have not been clearly described or effectively protected, and people have established crops in the park. Land titles and ownership have also been disputed (ParksWatch 2005b, p. 10).

The activities described above have occurred in the Tumbesian Region since Peru and Ecuador were colonized; and the region has undergone many changes. In 1957, a total of 75,102 ha (185,581 ac) were designated as a national forest (now known as the TRZ) in order to provide some protections to the resources in this area. Significant changes occurred particularly in the 1980s when both Peru and Ecuador experienced economic problems. The transfer of the presidency in 1985 was Peru's first transfer of power from one democratically elected leader to another in 40 years. During the early 1980s, Peru experienced inflation, economic hardship, and terrorism (U.S. State Department 2011, p. 3), all of which had significant implications with respect to habitat degradation and deforestation. Overall, however, the TRZ has for the most part remained unaltered (ParksWatch 2005, p. 3).

Species respond differently to habitat fragmentation (Blanchet *et al.* 2010, p. 8). Deforestation is generally a process of conversion of forests into a matrix consisting of patches of remaining forest at various stages of degradation and remaining timber, agricultural lands, urban areas, and pastures for grazing (Turner 1996, p. 200). Various studies have been conducted in order to try to quantify effects of habitat loss and fragmentation (Lees and Perez 2006, p. 206; Fahrig 2003, p. 487; Debinski and Holt 2000, p. 342; Brooks *et al.* 1999a,

p. 211; Fahrig 1997, p. 603; Turner 1996, p. 200). However, if selective logging is well managed, this practice can mimic natural disturbances, and many species can persist in logged forests or they can recolonize harvested areas from nearby unlogged patches (Putz *et al.* 2008, p. 1427; Peña-Carlos *et al.* 2008, p. 1458; Laurance 1999, p. 114). Some studies have found that the impact on certain wildlife species from logging is minimal (Fredericksen and Putz 2003, p. 1445). Some generalist species, such as the grey-cheeked parakeet, can successfully adapt to changes in habitat particularly if they have varied diets. Although this species is endemic to Peru and Ecuador, it has shown it can persist in altered habitats and is common within several reserves throughout its range. Not only does this species exhibit success in using altered habitats, its population appears to be increasing in some parts of its range (WorldLand Trust (WLT) 2011, p. 2). WLT reports that it is increasing locally in a new reserve, Buenaventura, which is in the foothills of the Andes in El Oro province, southwestern Ecuador (2011, pp. 1–2).

#### Peru

Although a permanent logging ban was enacted in the TRZ in 1974, it was reported that wood was being illegally harvested from the TRZ, processed at a hardwood floor factory in Zarumilla Department, and being exported to Ecuador (ParksWatch 2005b, pp. 12, 14). ParksWatch (2005, p. 15) reported that people come from the cities of Tumbes, Cerro Blanco, and Zarumilla to harvest wood such as trumpet trees (*Tabebuia* sp.), which is a species used for parquet floors. Frequently these illegal harvesters cross the border from Ecuador (ParksWatch 2005b, p. 4). Most of these trucks come through El Tutumo, allegedly because the Instituto Nacional de Recursos Naturales (INRENA, translated as the National Institute of Natural Resources) control posts were often not staffed, and the illegal timber harvesters took advantage of their absence (ParksWatch 2005b, p. 14). These problems were intensified by lack of security and coordination (ParksWatch 2005, p. 3). Despite these problems this species is described in its range as being common. Current birding trips to the TRZ encounter this species frequently (Elwonger 2004, p. 6), and there is no indication that logging affects this species such that it is a threat to the species overall.

#### Gravel extraction

ParksWatch reported that, as of 2003, construction materials such as sand,

rocks, and gravel were regularly extracted from La Angostura Creek which is part of the buffer zone of TRZ (ParksWatch 2005b, p. 16). The heavy machinery associated with the gravel pits also has secondary impacts (ParksWatch 2005b, p. 16). These impacts include compaction of soil by the trucks, which can cause hydrologic changes, damage to wildlife and plants, erosion, and increased recovery time for vegetation communities. However, there is no indication that this activity affects this species.

#### Roads

Illegal activities can increase with the construction of roads, leading to increased access by humans (Fimbel *et al.* 2001 in Lee 2010, p. 3). Roads are planned by all levels of government and may encourage legal and illegal activities such as agriculture, cattle ranching, poaching, or logging (Nature and Culture International (NCI) 2011, p. 1). However, roads in the TRZ were destroyed during the El Niño event of 1997–1998, and as of 2001, there were no plans to rebuild them (Walker 2001, p. 2). This lack of road access minimizes human entry into the species' habitat. In addition, the human population density in this area is low—there are two communities consisting of approximately 330 people (ParksWatch 2005, p. 9), and there is no evidence to suggest that roads used for gravel extraction are negatively affecting the species.

#### Honey Harvest

Within the TRZ, detrimental practices of honey harvesting occur (ParksWatch 2005b, p. 18), which can further degrade habitat. Bees generally have positive ecosystem effects—they pollinate native species and they contribute to the biodiversity of ecosystems such as the TRZ (Kearns *et al.* 1998, pp. 83, 90; Pearson and Dressler 1985, p. 38). However, due to the demand for honey, non-native bee colonies (which are aggressive—*Apis mellifera* for example) are being established (ParksWatch 2005b, p. 18). Non-native bees often outcompete native bees (Kearns *et al.* 1998, p. 93), which have a vital role in ecosystems. Some bees within the *Centris* genus (which are likely native to this region) use decaying wood as habitat (Kearns *et al.* 1998, p. 90). Decaying wood is also used by the grey-cheeked parakeet as nesting substrate. The use of decayed wood by bees may discourage the grey-cheeked parakeet from using it as nesting substrate. Additionally, in order to obtain honey, some harvesters may chop down grey-cheeked parakeet nesting trees, which

contributes to habitat degradation. The practice of honey harvesting may affect individual birds; however, there is no evidence that this practice occurs to an extent that it is a threat to the species or is likely to occur in the future.

#### Ecuador

There is less information available with respect to the present or threatened destruction, modification, or curtailment of the grey-cheeked parakeet's habitat or range in Ecuador. We know that this species is observed regularly in southwest Ecuador (Woods 2010, p. 34; Bonaccorso *et al.* 2007, p. 64; Van den Schoor 2007, p. 12). It has been documented in the areas of Achiotos, El Faique, and Progreso and Jorupe reserve, Macará, Loja province, Buenaventura Reserve, El Oro Province, and Cerro Blanco Reserva, Guayas. There are several accounts of this species being documented between the early 2000s and 2011 (Bonaccorso 2007, p. 64; <http://www.xeno-canto.org>, [www.avesecuador.com](http://www.avesecuador.com), <http://ibc.lynxeds.com/species/grey-cheeked-parakeet-brotogeris-pyrrhopterus>, all accessed August 22, 2011). Flocks of up to 12 birds have been observed recently; one group of 60 was observed in 2006 (Van den Schoor 2007, p. 12). A recent report indicated that in El Canclón Lagoon, Ecuador, cattle ranching, deforestation, agriculture development (rice crops and farms) may be affecting the species' habitat (Alava *et al.* 2007, p. 224). However, this species is a habitat generalist that seems to persist in altered habitat, and it is frequently observed on birding trips in Ecuador (Greenfield 2011, p. 1; Woods 2010, p. 34; Van den Schoor 2007, p. 12).

Additionally, there is no recent information on forest cover (Food and Agriculture Organization 2011, accessed June 17, 2011). Various estimates indicate that around 50 percent of Ecuador's land area is covered with forests (about 12 million ha (29.6 million ac)) (Sierra *et al.* 1999, p. 135; STCP Engenharia de Projetos Ltda. (STCP) 2006, unpaginated). However, in Ecuador's Tumbesian Region, 5,600 km<sup>2</sup> (2,162 mi<sup>2</sup>) are designated as protected forests. Of these, 25 percent of this area retains the original composition of species (Bonaccorso *et al.* 2007, p. 64). Bonaccorso *et al.* (2007, p. 64) also concluded that all of the areas where the grey-cheeked parakeet was observed had relatively extensive forest based on satellite imagery. Although southwestern Ecuador is densely populated, habitat has been reserved for wildlife (such as Jorupe Reserve, Buenaventura Reserve, and Cerro Blanco Reserve), and this species

appears to remain common in these protected areas.

The Ecuadorian government recognizes 31 different legal categories of protected lands (e.g., national parks, biological reserves, geo-botanical reserves, bird reserves, wildlife reserves, etc.) (see Factor D). As of 2006, the amount of protected land (both forested and non-forested) in Ecuador totals approximately 4.67 million ha (11.5 million ac) (ITTO 2006, p. 228). As of 2006, 38 percent of these lands had appropriate conservation measures in place to be considered protected areas according to international standards (i.e., areas that are managed for scientific study or wilderness protection, for ecosystem protection and recreation, for conservation of specific natural features, or for conservation through management intervention). At that time, 11 percent had management plans (ITTO 2006, p. 228).

Additionally, since 2006, other factors have occurred that are improving the quality of the habitat in this species' range. Ecotourism is occurring in areas where this species occurs, which is bringing awareness and funding for conservation projects. The success of ecotourism and land protection has been demonstrated in the past, particularly in Ecuador (Wunder 1999, p. 18). Ecotourism is characterized by small groups working in remote locations that have not yet been largely affected by commercialization (Lindsay 2003, p. 2) Ecotourism is an opportunity to preserve ecosystems and biological diversity by generating income to support conservation and research efforts. Ecotourism fees provide a mechanism for long-term protection of the land and its resources. In addition, NGOs are involved in working with Ecuador's protected areas. Fundación Jocotoco is a key player in Ecuadorian conservation and ecotourism; it was established to protect areas that are important for the conservation of endangered birds and their habitats. Some NGOs such as Fundación Jocotoco are buying additional land that will be protected in southern Ecuador ([www.worldlandtrust.org/projects/ecuador-reserves](http://www.worldlandtrust.org/projects/ecuador-reserves), accessed September 14, 2011).

Although within this species' existing range some habitat has decreased in the past, since that time both the Ecuador and Peruvian have formally protected this species' habitat (Bonaccorso *et al.* 2006, p. 61). Some habitat loss, conversion to other uses, and degradation within some parts of the grey-cheeked parakeet's range occurs, but we do not have information as to the extent of degradation (ParksWatch

2005b, pp. 9, 12). Studies have found that conditions inside the parks compared with the surrounding areas were in significantly better condition than their surrounding areas (Bruner *et al.* 2001, p. 125). In 40 percent of parks, land that had formerly been under cultivation and that was incorporated into park boundaries had recovered. This subsequently led to an actual increase in vegetative cover. The study found that 83 percent of parks were successful at mitigating encroachment (Bruner *et al.* 2001, p. 125). This was confirmed in a more recent study that found that forests in conservation units were four times better at protecting against deforestation than unprotected areas (Oliveira *et al.* 2007, p. 1235). In further support, ParksWatch (2005, p. 3) reports that the forests of TRZ have remained unaltered for centuries and have become a wildlife refuge. Additionally, both Ecuador and Peru are implementing policies and actions to combat deforestation and habitat degradation (refer to Factor D) and this will continue into the future.

Since the Peace Accord between Peru and Ecuador was signed in 1998, the habitat has experienced dramatic changes in the TRZ (Walker 2001, p. 2). The Peace Accord between Peru and Ecuador was to resolve border differences that had sparked violent confrontations. Prior to 1988, military troops were based at El Caucho near Quebrada Faical, Peru. Apparently, hunting supplemented the diet of the troops, and since the Peace Accord, many game species have returned and have become more prevalent according to local communities (Walker 2001, p. 2). These species likely play a significant role in the grey-cheeked parakeet's ecosystem; they may serve to distribute seeds, contribute to the quality of leaf fodder, or other roles that are not as evident (Estes *et al.* 2011, p. 301). As of 2001, the former military posts are only manned by two Peruvian border police, and although the guards continue to supplement their diets with hunting, the pressure is less severe on typical game species (Walker 2001, p. 2). In 2001, the quality of habitat on the Peruvian side of this border was characterized as excellent and improving. On the Ecuadorian side, habitat was described as more inhabited by humans and having limited suitable habitat—cattle and towns had replaced forested areas (Walker 2001, p. 2). Despite the increase in human inhabitants in this area, this species exhibit success in using altered habitat and it exists in protected areas where ecotourism and environmental

education is prevalent. The grey-cheeked parakeet is commonly seen in reserves and protected areas, and in some cases there are anecdotal reports that it is actually increasing in population (WLT 2011, p. 2).

#### Conservation Programs

The biodiversity of the southern Ecuadorian area is recognized by the government; and the link between ecotourism and conservation has strengthened in the past decade. In 1999, a case study about ecotourism focusing on Ecuador was published that highlighted the link between income from ecotourism and forest conservation (Wunder 1999, p. 1). Since 2001, many efforts have been initiated to protect, conserve, and improve habitat in this species' range. These activities are achieved through ecotourism, environmental education, and other projects. Land is being purchased to designate formally as reserves (<http://www.wanconservancy.org>, accessed September 14, 2011). Additionally, the United States pledged \$40 million for the Peru-Ecuador border integration project (U.S. State Department 2011b, p. 7) and another \$4 million to support Peruvian and Ecuadorian de-mining efforts along their common border (<http://www.state.gov/r/pa/ei/bgn/35762.htm>, accessed June 10, 2011). The presence of fewer military troops is alleviating pressure on the TRZ. All of these activities are likely to reduce any impacts to species and habitat along the border.

Many collaborative and innovative conservation projects to conserve land have occurred recently. Several NGOs such as Birdlife International, WorldLand Trust, Nature and Culture International, and local organizations such as Fundación EcoCiencia, Loro Parque Fundación, ProNaturaleza, and Fundación Pro-Bosque, are working to protect areas in Tumbesian Ecuador. Fundación EcoCiencia's mission is to conserve biological diversity through scientific research, recovery of traditional knowledge, and environmental education. The Foundation was created in 1989 and has six program areas: Biodiversity Research and Monitoring; Environmental and Conservation Training Capacity; Natural Resources Management, Environmental Policies; and Information and Environmental Economy. This NGO has contributed towards research of the grey-cheeked parakeet. The Loro Parque Fundación (LPF) is headquartered in Loro Parque, Tenerife, Spain, and works to conserve threatened parrot species and their habitats, through education, applied research, responsible breeding

programs, and community-based conservation activities that use these species as ambassadors for nature. LPF has also contributed funding towards projects that involved the grey-cheeked parakeet. ProNaturaleza (Peruvian Foundation for the Nature Conservancy) was created in 1984. It is dedicated to the conservation and preservation of Peru's environment, particularly sustainable use of the natural resources. ProNaturaleza has been involved in the protection of the TRZ by promoting local involvement, establishment of agreements between national and international organizations, restoration of mangrove ecosystems, regulation of extractive activities, and environmental education since 1988 (ParksWatch 2005b, p. 7). In addition to habitat protections in place for this species, it also benefits through conservation efforts by these NGOs.

The World Land Trust and Fundación Pro-Bosque are working in the Cerro Blanco Reserve area with local communities, focusing on Puerto Hondo, where young local people, with guidance and training from Foundation staff, lead tourists on guided canoe trips through a rich mangrove estuary (<http://www.wlt.org>, accessed June 15, 2011). Between 2006 and 2010 some 235 hectares (581 ac) of degraded lands have been reforested with over 250,000 saplings of 30 native species. In 2004 an environment education centre was constructed for use by the local community, and a children's ecology club runs weekly activities. A community park warden program is building local awareness for this unique reserve and its wildlife. WLT and Fundación Pro-Bosque are seeking to expand the Cerro Blanco Reserve through additional land purchase. This includes both unprotected and critically threatened forest habitat near the existing reserve, as well as land that has been deforested but can be replanted.

International and local NGOs are also actively involved in working towards forest protection. Several reserves have been established. Fundación Jocotoco, an Ecuadorian organization established to protect land for the conservation of Ecuador's endangered birds such as the grey-cheeked parakeet, buys lands and manages them as private ecological reserves. Ecotourism activities, particularly focusing on birding expeditions, in the Tumbesian region are abundant. Many of the ecotourism companies advertise the grey-cheeked parakeet as an ecotourism draw (Woods 2010, p. 34; Van den Schoor 2007, p. 13; Elwonger *et al.* 2004, pp. 3, 20). All of these efforts are likely to have a significant positive effect on grey-

cheeked parakeet habitat, particularly in the absence of the international pet trade, which was the greatest threat to the species prior to the 1990s. New reserves are being created within this species range (WLT 2011, p. 1), and its population has increased in at least one reserve, Buenaventura (WLT 2011, p. 2). Ecotourism generates income in local communities, environmental education programs conducted by NGOs increase awareness.

These and other NGOs have been involved in some form of protection of this species' habitat for many years and are likely to be involved in the future. Although these partnerships and conservation activities are discretionary and not regulatory mechanisms; they are having positive effects on this species and its habitat by providing data through scientific research, environmental education, and community-based conservation programs; and they partner with both the governments of Peru and Ecuador in carrying out their activities.

The governments of Ecuador and Peru are also investing in reforestation efforts. Despite no laws existing in Peru that require reforestation activities, Peru is implementing reforestation projects, in part through carbon credits. Peru recently implemented its National Reforestation Plan. One aspect of this plan is to convert degraded lands back to natural habitat by planting native species. Although there is some indication that there may be insufficient funds for full implementation (Climate, Community and Biodiversity Alliance (CCBA) 2010, p. 7), this type of reforestation is a priority activity in the plan, especially in rural areas (National Reforestation Plan 2005, p. 2). In 2008, Ecuador also implemented a national forest conservation plan, called Programa Socio Bosque, in order to conserve over 5 million ha (12.4 million ac) of forest (Conservation International 2008, p. 1).

#### Reducing Emissions From Deforestation and Forest Degradation (REDD)

In connection with the National Reforestation Project, Ecuador and Peru are working towards reducing emissions from deforestation and forest degradation by using a concept of reducing emissions from deforestation and forest degradation (termed REDD) to protect forested areas (CarbonTree.org, <http://www.climate-standards.org>; <http://www.un-redd.org/AboutREDD>, accessed May 16, 2011). REDD creates incentives through carbon credits which promote reforestation.

The Government of Ecuador implemented the REDD program

through the Ministry of Environment to stem the current rate of deforestation in Ecuador (1.46 percent per year), thereby reducing deforestation (<http://www.un-redd.org>, accessed June 17, 2011). In 2008, the Socio Bosque Program (PSB) was launched, providing economic incentives to land owners such as indigenous communities, who voluntarily protect their forests. Goals of Socio Bosque include decreasing deforestation and the resulting production of greenhouse gases, and preserving native forests and native ecosystems in part by providing needed financial resources to people in rural areas. Though the program is still in its early stages, its inception implies a commitment by the Ecuadorian government to protect its natural resources, initiate reforestation programs, and protect habitat for species such as the grey-cheeked parakeet.

Additionally, in March 2011, the 8,795 ha (21,730 ac) Angostura-Faical Regional Conservation Area, in the Tumbes Department, was protected by presidential decree as a carbon offset project. This was in cooperation with the Regional Government of Tumbes and two nongovernmental organizations: The Carbon Tree Conservation Fund, and Nature and Culture International (NCI). The park, which is approximately 20 km (12 mi) north of the TRZ, had been primarily threatened by an advancing agricultural frontier and degradation by selective illegal logging. Approximately 65 percent of Ecuador's native forests are owned by indigenous communities (Palacios 2005 in Hübenthal *et al.* 2010, p. 4). Because one aspect is to create sustainable livelihoods (alternatives to unsustainable use of forested areas) for indigenous communities and is within this species' range, this project is likely to have a positive impact on this species' habitat.

#### Summary of Factor A

The grey-cheeked parakeet, although native to a relatively small area, has been documented in a wide range of habitat types such as disturbed humid forest, evergreen forest, deciduous *Ceiba trichistandra* forest and scrub, arid scrubland, and semi-open agricultural land (Best *et al.* 1995, p. 243). Land use changes have the potential to cause forest fragmentation and studies have shown that over time that some resident bird diversity declines within forest fragments (Turner 1996, p. 202). However, other studies have indicated that some species, particularly smaller species such as the grey-cheeked parakeet, are able to adapt to habitat changes (Ibarra-Macias *et al.* 2011, p.

703; Moore *et al.* 2008, p. 961). Timber extraction, gravel extraction, encroachment, honey harvest, roads, or other forms of deforestation occur in some areas of grey-cheeked parakeet range; however, there is no indication that it is impacting this species at the population level. The range countries are working to combat deforestation. Recent commitments by both countries to stem deforestation under the REDD program indicate a continued commitment to protect forest habitat, including that utilized by the grey-cheeked parakeet. Both governments' economies are fairly strong, which has a positive correlation with wildlife conservation (Davies *et al.* 2006, p. 2130). The protected areas in which this species occurs both in Peru and Ecuador offer safeguards from development to populations of grey-cheeked parakeet in addition to the species persisting in altered habitat.

This species is commonly seen throughout its range, in groups of 12–60 birds (Woods 2010, p. 12; Van den Schoor 2007, p. 12). Although some of its habitat may be affected by deforestation, this species appears not to be adversely affected and it can persist in altered habitats (Best *et al.* 1995, p. 243), including urban environments. This species occurs in several protected areas. Of these, Cerro Blanco Protection Forest, Ecuador, and Tumbes Reserved Zone, Peru, are particularly important, with recent daily counts of over 50 individuals having been observed. This species is observed regularly on birding trips; and it appears to be common within its range in Ecuador's protected reserves. The governments of Ecuador and Peru are both working on reforestation initiatives and this is likely to continue into the future. NGOs are purchasing and preserving lands. Local ecotourism companies promote conservation of the species and its habitat. They advertise this charismatic species to draw people to these areas. Additionally, since the pressure of poaching for the international pet trade has been alleviated due to restrictions put in place in the 1980s and 1990s, grey-cheeked parakeets are commonly observed in the wild and populations appear to be increasing (WLT 2011, pp. 1–2). Though individual grey-cheeked parakeets may be affected by some of these activities, there is no evidence to indicate that the grey-cheeked parakeet is negatively impacted at the population level. Therefore, based on the best available scientific and commercial information, we find that the present or threatened destruction, modification, or curtailment of habitat or range is not a

threat to the grey-cheeked parakeet in any portion of its range now or in the future.

*B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes*

Pet Trade

The grey-cheeked parakeet has always been a popular pet in part because of its ability to mimic human voices (Feigelsstock 2009, p. 3). In Peru and Ecuador, it is common to have a parrot as a pet (Bergman 2009, p. 2; Williams and Tobias 1994 in Best *et al.* 1995, p. 244). Illegal bird trade (the uncontrolled selling of bird species) is common in markets and street vendors in both countries (Bergman 2009, pp. 1–5; Alava *et al.* 2007, p. 230; Gonzalez 2003, p. 438; Best *et al.* 1995, pp. 233–250). Unlike in the United States and the European Union, the origin of many pet birds in Latin America is from the wild, and the practice of poaching for the domestic pet trade, while it is less common, continues in Peru and Ecuador (Gastañaga *et al.* 2010, pp. 79–80; Weston and Memon 2009, pp. 77, 79, 82; Gonzalez 2003, p. 438). Several studies have investigated the harvesting, local trade, and conservation of parrots in northeastern Peru and Ecuador. Despite the local trade in this species, discussed below, the primary factor contributing to its decline was the massive international trade in this species, which has been effectively halted through regulatory mechanisms.

In the early 1970s, Ecuador and Peru banned the export of wildlife. In the late 1970s, Peru lifted the moratorium (Fuller *et al.* 1987 in Best *et al.* 1995, p. 234). By 1983, Ecuador had restricted exports of wildlife and Peru had implemented quotas for wildlife exports (Fuller *et al.* 1987, p. 289). However, even in 1987, this species was found in markets in Lima, Peru, and sold for \$10–\$12 USD each (Plowden 1987 in Best *et al.* 1995, p. 244). Between 1984 and 1988 (prior to the enactment of the WBCA in 1992), approximately 42,000 live grey-cheeked parakeets were reported to have been imported into the United States (UNEP–WCMC, accessed May 3, 2011; Mulliken and Thomsen 1990 in Parker *et al.* 1995, p. 213). In 1989, the trade decreased, but rose again in 1990–1991 (Mulliken *in litt.* 1995 in Best *et al.* 1995, p. 245). Best *et al.* (1995, p. 246) indicated that trade data may have been exaggerated by misdeclaring other parrot species as this species. In 1993, Peru again implemented a moratorium on exports of this species, after a recommendation

by the CITES Animal Committee (Best *et al.* 1995, p. 246).

Prior to this species being protected by various regulatory mechanisms (refer to Factor D) in the early 1990s, this species had been heavily traded (Collar and Juniper 1998, p. 14; Best *et al.* 1995, pp. 245). Trade in parrots was extremely common in the 1980s due to huge demand from developed countries (Rosales *et al.* 2007; Best *et al.*, 1995, pp. 234–235). The UNEP–WCMC Trade Database reported 96,018 live grey-cheeked parakeets were imported by reporting countries between 1981 and 1990 (accessed September 14, 2011). This is an average of 10,668 birds per year. Exports of over 5,000 live grey-cheeked parakeets per shipment occurred in the 1980s. Between 1981 and 1985 it was the fifth most common Neotropical psittacine species imported into the U.S.A (Best *et al.* 1995, p. 244). Between 1983 and 1988, it constituted 34 percent of Peru's parrot trade (p. 244). In 1984, Peru exported in excess of 20,000 grey-cheeked parakeets; and the U.S.A. was the principal consumer (Best *et al.* 1995, p. 245). Since 2000, only 12 live grey-cheeked parakeets were reported to have been in international trade (UNEP–WCMC CITES Trade database, accessed May 12, 2011), and only one of those was from Peru or Ecuador. International trade in this species, which was the primary factor impacting the population decline of this species, is now negligible.

Although poaching still occurs, public sentiment is changing due to educational awareness programs in Peru and Ecuador (Fundación Jocotoco 2011). In the late 1990s, income from the sale of young parrots in Peru could yield between \$10 and \$30 USD per day, while other sources of income such as agriculture and day labor would only yield \$5 per day (Kvist *et al.* 2001 in Lee 2010, p. 3; Gonzalez 2003, pp. 437–446). In 1998, in the United States, this species sold for between \$175 and \$400 (Marsh 1998, p. 2). Prior to the implementation of many regulatory protections that were initiated in the 1990s, an entire brood of parrot chicks would often be taken from nests and sold locally (Best *et al.* 1995, p. 244). Poaching was occurring in the late 1990s even in areas designated as protected. A study by Gastañaga *et al.* examined nest poaching and illegal trade of parrots, including the reasons for poaching, methods, seasons, and locations where the sale and actual poaching of parrots occurred. This study found that this species is still being poached in the wild (Gastañaga *et al.* 2011, pp. 79–80), even in protected areas and despite national protections in

place. Although during the study in 2007 and 2008, 385 specimens of grey-cheeked parakeet were found in 5 markets for sale in Peru, the study also found that where protections and enforcement have been implemented, such as in Cusco, there were no parrots for sale in markets. This study was over a 12-month period between 2007 and 2008. In the 20 markets in eight cities visited, the grey-cheeked parakeet was found in five of those eight cities; but significantly, not in Lima. The study indicated that wildlife markets are well known, and they believed that they had identified all the wildlife markets in seven out of the eight cities (Gastañaga *et al.*, p. 78). The survey was conducted over four quarterly periods in these 20 markets in eight cities. This species is commonly found distributed throughout its historic range within an area of 9,300 km<sup>2</sup> (3,591 mi<sup>2</sup>). Compared with an average of 10,668 birds per year, 385 specimens of grey-cheeked parakeet found in 5 markets for sale in Peru is minimal.

Poaching has been found to be significantly lower at protected sites (Pain *et al.* 2006, p. 322; Wright *et al.* 2002, p. 719). For example, Gonzalez (2003, pp. 437–446) found evidence of poaching, particularly during nesting seasons, in the Pacaya-Samiria National Reserve, a protected area in the Loreto Department, Peru, during his 1996–1999 study. However, he also found that poaching decreased during the 1998 harvest season (Gonzalez 2003, p. 444), which he attributed to increased numbers of birds confiscated by regional authorities, which subsequently discouraged poaching (also see Factor D). An additional factor is that this species may be less accessible than other parrot species, due to its preference for forested habitat that consists of complex canopy layers.

In the U.S., this species is no longer common (Feigelstock 2009, p. 3; Low 2003, p. 2) possibly due to its relatively short lifespan, the difficulty of breeding this species in captivity, and susceptibility of this species in captivity to a wide range of diseases (see Factor C). The best available information indicates that poaching is becoming less frequent due to involvement by NGOs, minimal international demand for the species, and improved enforcement by authorities (Gastañaga *et al.* 2011, p. 82; UNEP–WCMC Trade Database). Recently, this species has been the focus of many conservation, public awareness and ecotourism projects. This species attracts birders, and it is advertised on many ecotourism internet sites for Tumbesian Ecuador and Peru. Conservation programs, particularly

with a focus on endemic bird species, involve local communities, and many NGOs conduct local educational awareness of the species' value in the wild (Fundación Jocotoco 2011).

#### Summary of Factor B

Although overutilization for the pet trade was a threat to this species in the past, we have no information indicating that the grey-cheeked parakeet is currently being overutilized and we have no reason to believe the levels of trade that occurred in the past will become a threat to the species in the future. The protections in place are becoming more effective, and international trade is now negligible. This species exists in several protected habitats, and there is no evidence the species is decreasing in population (Woods 2010, p. 34, Elwonger *et al.* 2004, p. 3; Van den Schoor, 2007). In some cases it appears to be increasing (WLT 2011, p. 2). It is observed regularly in three of Ecuador's protected reserves (Jorupe, Buenaventura, and Cerro Blanco Reserve), in El Canclón Lagoon, and in Peru's TRZ. We acknowledge that poaching continues to occur, but the primary impact to the species that contributed to its several population decline, the international pet trade, essentially no longer exists. The primary impact to the species, removal of the wild for the international pet trade, has been reduced to the point where it is no longer a threat. Since 2000, only one live grey-cheeked parakeet was reported to have been exported from either Peru or Ecuador by CITES-reporting countries. Poaching may occur in a limited number of areas, but to the best of our knowledge, it is not occurring in all locations where this species occurs. Additionally, environmental awareness campaigns by local NGOs are decreasing the levels of poaching. Based on the best available scientific and commercial information, we find that overutilization for commercial, recreational, scientific, or educational purposes is not a threat to the grey-cheeked parakeet now or in the future.

#### C. Disease or Predation

This species is susceptible to many diseases (Pesaro *et al.* 2005 pp. 321, 325; USGS 1999, pp. 93–99; Butcher *et al.* 1990, p. 1025; Panigrahy *et al.* 1983, p. 1166). However, most of the available research addresses captive-held birds which may have a higher incidence of disease than wild birds due to their exposure to sick birds, unsanitary conditions, improper husbandry methods, etc. It is not clear how prevalent disease factors into wild

populations of this species. A discussion of diseases that are known to affect this species follows.

Avian polyomavirus (APV) is one of the most significant viral pathogens of cage birds (Pesaro *et al.* 2005, p. 321). This species is susceptible to APV infection, which appears in birds up to approximately 14 weeks of age, after which infection is asymptomatic. The mortality peak in some Psittacine species occurs between 4 and 8 weeks of age (Pesaro *et al.* 2005 pp. 321, 325). Most birds infected with APV are mildly affected (Gonzalez *et al.* n. d., p. 2). The extent to which this disease and others addressed below occur in wild populations is unclear, but these diseases have been found to occur in the wild (USGS 1999, p. 94). USGS indicates that disease is more likely to exist where there are major bird concentrations. APV is likely to affect this species more frequently if this species is exposed to humans through an increase of activities such as ecotourism (Factor E) or logging (Factor A), or other disease vectors such as cattle.

Avian tuberculosis (also known as avian mycobacteriosis (*Mycobacterium avium*) is known to occur in both wild and captive-held *Brotogeris* species (USGS 1999, p. 96; Butcher *et al.* 1990, p. 1025; Rosskopf *et al.* 1986, p. 219; Panigrahy *et al.* 1983, p. 1166). There are 20 types of *M. avium*. Mycobacteriosis is seen fairly frequently among parakeets and other parrots in captivity (USGS 1999, Chapter 8, p. 96), and can cause die-offs in captive flocks. In captivity, parakeets such as the grey-cheeked parakeet are likely to be exposed to mycobacterium; however, cases of tuberculosis have become less frequent (Butcher *et al.* 1990, p. 1023). Birds are more susceptible if their diet is inadequate, and if they are subjected to stressful conditions such as crowded or unsanitary conditions in cages or cold temperatures (USGS 1999, p. 95); fecal exposure is the main route of transmission. This disease causes chronic wasting characterized by weight loss, diarrhea, difficulty breathing, and tumors of the skin and eyes (Butcher *et al.* 1990, p. 1023; USGS 1999, Chapter 8, pp. 93–97). Tumors may also affect the spleen, liver, lungs, air sacs, skin, and bone marrow. It is spread through inhalation, direct contact with infected birds, and ingestion of contaminated food or water. Parrots can obtain also tuberculosis from pigs (USGS 1999, p. 1); however, it is unclear if humans can transmit *M. avium* to parakeets (USGS 1999, p. 93). *M. avium* has been found to persist outside of a host for over 40 months (USGS 1999, p. 97). It persists



longest in poultry litter, and can also occur in wastewater, sewage effluent, and fertilizers (USGS 1999, p. 97). It is unclear the extent to which tuberculosis affects this species in the wild; however USGS reported in 1999 (p. 96) that tuberculosis has rarely been found to be the cause of a major die-off.

Although captive birds may be more susceptible to diseases in captivity, in most areas where this species occurs, the habitat is relatively undisturbed and exposure to disease is likely minimal. Variation in spatial distribution affects patterns of disease. In captivity, this species may be in close quarters, under stress, and potentially exposed to diseases that it does not encounter in its natural, wild environment. Research has indicated that populations that exist in separate, smaller, more isolated patches slows the dispersal rate and increases the probability of local extinction of pathogens (Carlsson-Graner and Thrall 2002, p. 97). This species prefers forested habitat with complex canopy layers, in areas that are fairly distant from human establishments. The species exists in fairly small groups with large home ranges. Without clear evidence that these diseases negatively affect this species in the wild, we do not consider diseases discussed above to occur at a level such that we consider them to be a threat to the species.

#### Ectoparasites

We examined whether ectoparasitism by lice and mites is a threat to this species. Many mites have evolved symbiotic relationship with avian species (Atyeo 1989, p. 101). Not all bird-mite relationships are parasitic; some might be benign or beneficial (Proctor and Owens 2000, pp. 358, 362). Many mites are nonparasitic scavengers and use nests or bird feathers as habitat. Despite the presence of mites found in nests of this species, there is no evidence that mites cause mortality or disease, or that they have a negative effect on this species (Atyeo 1989, p. 101). We conducted a search of available information, and there is no other information indicating that lice and mites negatively affect the species.

#### Predation

In 2005, a study of nest competition, which examined preference of substrate material, age of nesting cavity, and depredation of several bird species, indicated that eggs are heavily predated in Peru (Brightsmith 2005, entire). Although this study concluded that nests are heavily predated in Peru, the study did not include *B. pyrrhoptera*. Predators included birds, marsupials, termites, monkeys, and rodents

(Brightsmith 2005, p. 78). This researcher found that of 47 nests, including 23 nests in termitarium (termite mounds), 12 primary cavity nests, and 13 secondary cavity nests, between 4 and 17 percent of the nests in termitarium were preyed upon, and 77 percent of the secondary nests were preyed upon (Brightsmith 2005, p. 78). Secondary nests are previously used tree cavities, and primary nests are newly excavated tree cavities. The study found that newly excavated nests had lower rates of predation.

Over time, bird species such as the grey-cheeked parakeet develop mechanisms in order to counter the effects of predation. All of the predators in the study described above are native to Peru and Ecuador; so a natural predator-prey balance has likely developed over time. This species lays between 4 and 6 eggs, usually 5 eggs. This behavior may be a mechanism that has developed in order to combat pressures such as predation. While predation may be a source of mortality, there is no evidence that it is a limiting factor for population growth for this species. Another response mechanism to predation is building nests in new sites; the research above found that these nests were less affected by predation. Although predation occurs on this species, predation is a normal ecological interaction in the wild. The best available information does not indicate that predation is a threat to the species.

#### Ants

There is only one report of ant predation on *Brotogeris* species. Research in Peru found that termitaria inhabited by two other species of *Brotogeris* (*B. sanctithomae* and *B. cyanopectera*) were coinhabited by *Dolichoderus* ants (Brightsmith 2000, p. 536). In another study, ants (species unknown) had drilled a hole in an egg and had consumed the contents (Brightsmith 2005, p. 76). The 2005 study did not include predation by ants or termites in its results, but ants and termites also were found to depredate nests (Brightsmith 2005, p. 77). At this time, it is unclear why the study did not include predation by ants and termites. It may be that predation by ants and termites was minimal compared with the mutualistic benefit of sharing termitaria between ants, termites, and avian species. Observations suggest that ants consume the feces of bird species, thereby keeping the nests clean (Brightsmith 2000, p. 537). Although it is unclear which species of ant had depredated this nest, overall, it appears that there is a mutualistic relationship

between some species of ants and *Brotogeris* parakeets (Brightsmith 2005, p. 77; Brightsmith 2000, p. 536). Although ants have the potential of being a localized threat, the best available information does not indicate that this factor affects the species such that it is a threat to the species throughout all or a significant part of its range.

#### Summary of Factor C

We have no evidence of adverse impacts to wild-populations of grey-cheeked parakeet from disease or predation. Disease and predation are normal occurrences within wild populations. With respect to the grey-cheeked parakeet, there is no indication that these are occurring to an extent that they are threats. We conclude, based on the best available scientific and commercial information, that neither disease nor predation is a threat to the grey-cheeked parakeet in any portion of its range now or in the future.

#### D. The Inadequacy of Existing Regulatory Mechanisms

Each range country manages this species differently. Within each country, not only is there a wide variability in the amount of information available about the species, but also about the level of management and monitoring of the species. Existing regulatory mechanisms that could have an effect on potential threats to the grey-cheeked parakeet include (1) local land use laws, processes, and ordinances; (2) Federal laws and regulations; and (3) international treaties. Because most of the available information addresses the grey-cheeked parakeet in protected reserves, the discussion below focuses on national laws.

#### Ecuador

##### Laws

Ecuador has numerous laws and regulations pertaining to conservation of its species, forests, and forestry management (also refer to Factor B). These include its Forestry Act (comprised of Law No. 74 of 1981—Forest Act and conservation of natural areas and wildlife (Faolex 1981, pp. 1–54)—and Law No. 17 of 2004—Consolidation of the Forest Act and conservation of natural areas and wildlife (Faolex 2004, pp. 1–29)); the Ecuadorian Strategy for Forest Sustainable Development of 2000 (Estrategia para el Desarrollo Forestal Sostenible); and Decree 346, which recognizes that natural forests are highly vulnerable (ITTO 2006, p. 225). The Ecuadorian government recognizes different legal categories of protected

lands. As of 2006, the amount of protected land (both forested and non-forested) in Ecuador was approximately 4.67 million ha (11.5 million ac) (ITTO 2006, p. 228). Ecuador's National System of Protected Areas (Sistema Nacional de Áreas Protegidas or SNAP) is a network of lands held by various entities including national, privately owned, and community-owned lands (Hübenthal *et al.* 2010, p. 5).

Additionally, the grey-cheeked parakeet is protected under Ecuadorian law by Decree No. 3,516 of 2003 as vulnerable (Unified Text of the Secondary Legislation of the Ministry of Environment (EcoLex 2003b, pp. 1–2, 34) (also see discussion under Factor B). This decree summarizes the laws governing environmental policy in Ecuador and mandates that the country's biodiversity is protected and used primarily in a sustainable manner. Appendix 1 of this Decree lists the Ecuadorian fauna and flora that are categorized as critically endangered (En peligro crítico), endangered (En peligro), or vulnerable (Vulnerable) (EcoLex 2003a, p. 16). The grey-cheeked parakeet's status confers protections to the species under Resolution No. 105 of 2000 and Agreement No. 143 of 2003 (Standards for the control of hunting seasons and licenses for hunting of wildlife). Resolution No. 105 and Agreement No. 143 regulate and prohibit commercial and sport hunting of all wild bird species, except those specifically identified by the Ministry of the Environment or otherwise permitted (EcoLex 2003a, p. 1; EcoLex 2000, p. 1). Under this law, the Ministry of the Environment does not permit commercial or sport hunting of the grey-cheeked parakeet (EcoLex 2003b, p. 17). Although Ecuador allows hunting, and removal of this species from the wild by indigenous people is legal for subsistence purposes (Bergman 2009; pp. 1–5), there is no evidence that this practice occurs at an unsustainable level.

#### Protected Areas

There are at least 30 protected areas throughout the country. These protected areas include national parks, biological reserves (one is a marine reserve), ecological reserves, wildlife production reserves, wildlife sanctuaries, national recreational areas, and a bi-national park, El Cóndor, through the Peace Agreement signed with Peru ([www.ambiente.gov.ec](http://www.ambiente.gov.ec); [www.parks.it](http://www.parks.it), accessed June 10, 2011). A study in 2001 found that tropical parks have been surprisingly effective at protecting ecosystems and species within boundaries designated as parks or other

protected status despite underfunding and pressures for resources (Bruner *et al.* 2001, p. 126). The study found that protected areas are especially effective in preventing land clearing. It also found that in 40 percent of parks, land that had formerly been under cultivation and that was incorporated into park boundaries had recovered. This subsequently led to an increase in vegetative cover. The study found that 83 percent of parks were successful at mitigating encroachment (Bruner *et al.* 2001, p. 125). The study concluded that the conditions inside the parks compared with the surrounding areas were in significantly better condition than their surrounding areas (Bruner *et al.* 2001, p. 125). A later study supported this finding; it found that forests in conservation units were four times better at protecting against deforestation than unprotected areas (Oliveira *et al.* 2007, p. 1235).

#### Government Incentives

In the past few years, many advances have been made in protections for this species; such as incentives initiated by the government for communities to conserve this species. In 2006, some researchers indicated that despite official protections in place, there were few actual effective local protections in Ecuador (Bonaccorso *et al.* 2006, p. 61). NGOs had also expressed concern that Ecuador was not effectively managing its wildlife and resources. In 2006, the International Tropical Timber Organization considered ecosystem management and conservation in Ecuador, including effective implementation of mechanisms that would protect grey-cheeked parakeet habitat, to be lacking (ITTO 2006, p. 229). In 2007, another organization indicated that the Forestry and Wildlife Service, Office of the Ecuadorian Ministry of Environment, was not adequately implementing conservation measures for the Manglares Churute Ecological Reserve (MCER), where this species was recently observed. The NGO indicated that the management plan in MCER had not been fully applied (Alava *et al.* 2007, p. 231). However, since that time, the government of Ecuador has adopted a national forest plan. In 2008, Ecuador implemented this forest conservation plan, called *Programa Socio Bosque* (“Forest Partners”) in order to conserve over 5 million ha (12.4 million ac) of forest (Conservation International 2008, p. 1). This program, which is administered through the Minister of the Environment, offers incentives to landowners and indigenous communities willing to conserve their forests. Goals are to

reduce carbon emissions by 13.5 million tons per year and to reduce poverty by providing additional income to more than two million people in Ecuador. This program has the support and involvement of many NGOs, both local and international. In the range of this species, many areas are receiving more protection now, and this species is being used as an ecotourism magnet. Additionally, many NGOs are involved in land conservation and species protection in Ecuador (refer to discussion under factor A), and we expect these activities to continue into the future.

Although the governmental institutions responsible for natural resource oversight in Ecuador may be under-resourced and there is a lack of law enforcement on the ground, the country is making progress in its conservation. Ecuador's Ministry of Environment's *Socio Bosque* subsidy program has encouraged many large forest owners to participate in this program. Many NGOs are actively involved in conservation programs in Ecuador, particularly in southern Ecuador, where this species resides. Ten percent of all of Ecuador falls under some form of environmental protection or special status. As of 2006, 500,000 hectares (1,235,527 ac) are covered by management plans, and management plans have been prepared for two other reserves 13,000 ha (32,125 ac) in size (ITTO 2006, p. 228). The grey-cheeked parakeet exists in several protected areas such as El Canclón Lagoon, which was declared a Ramsar site in 1996, and is one of the 32 identified wetlands in Ecuador's coastal region (Alava *et al.* 2007, p. 224).

#### NGOs

As discussed under factor A, many collaborative and innovative conservation projects to conserve land have occurred recently. Several NGOs such as Birdlife International, WorldLand Trust, Nature and Culture International, and local organizations such as Fundación EcoCiencia, Loro Parque Fundación, ProNaturaleza, and Fundación Pro-Bosque, are working to protect areas in Tumbesian Ecuador. The World Land Trust and Fundación Pro-Bosque are working in the Cerro Blanco Reserve area with local communities, focusing on Puerto Hondo, where young local people, with guidance and training from Foundation staff, lead tourists on guided canoe trips through a rich mangrove estuary (<http://www.wlt.org>, accessed June 15, 2011). Between 2006 and 2010 some 235 hectares (581 ac) of degraded lands have been reforested with over 250,000

saplings of 30 native species. In 2004 an environment education centre was constructed for use by the local community, and a children's ecology club runs weekly activities. A community park warden program is building local awareness for this unique reserve and its wildlife. WLT and Fundación Pro-Bosque are seeking to expand the Cerro Blanco Reserve through additional land purchase. This includes both unprotected and critically threatened forest habitat near the existing reserve, as well as land that has been deforested but can be replanted. In addition to habitat protections in place for this species, it also benefits through conservation efforts by these NGOs.

#### Trade

Ecuador continues to strengthen its regulatory mechanisms. The decline in population numbers of this species primarily occurred in the 1980s due to significant trade that occurred of this species (UNEP-WCMC CITES trade database, accessed September 14, 2011). Between 1984 and 1988 (prior to the enactment of the WBCA in 1992), approximately 42,000 live grey-cheeked parakeets were reported to have been imported into the United States (UNEP-WCMC, accessed May 3, 2011). The WBCA effectively halted imports of wild-origin birds into the United States. Since 2000, only 12 live grey-cheeked parakeets were reported to have been in international trade (UNEP-WCMC, accessed May 12, 2011); and only one of those was reported to be from either Peru or Ecuador. Because of adequate regulatory mechanisms such as CITES and the WBCA, both at the domestic and international level, we believe that the primary threat to this species, poaching for the international pet trade, has been alleviated. In addition, Ecuador continues to design and implement new regulatory and conservation strategies to address issues such as poaching for the pet trade that affect this species. Based on the negligible amount of international trade (also refer to discussion in Factor B), we do not find that the international trade in this species is a threat to the species. Therefore, the best available information indicates that regulatory mechanisms are adequate in Ecuador to protect this species and its habitat.

#### Peru

##### Laws

This species is listed as vulnerable in Peru under Supreme Decree No. 034-2004-AG (2004, p. 276,855). This decree prohibits hunting, take, transport, and trade of protected species, except as

permitted by regulation. Poaching for the domestic pet trade does occur; however, poaching does not appear to occur at a level such that it impacts the species. Other laws that Peru has enacted to protect parrot species such as the grey-cheeked parakeet have generally been effective (Gastañaga *et al.* 2011, p. 77), particularly since enactment of Ley Forestal y de Fauna Silvestre No 27308. This law regulates the commercialization of wild species, and the minimum requirements for their harvest and their collection and transportation; and it establishes a maximum collection quota for each species from their natural environment (Gastañaga *et al.* 2011, p. 77). INRENA annually sets a quota for certain species, trade in the grey-cheeked parakeet is not permitted (Gastañaga *et al.* 2011, p. 77).

##### Protected Areas

The Peruvian National Protected Area System includes several categories of habitat protection. Habitat may be designated as any of the following: (1) Parque Nacional (National Park, an area managed mainly for ecosystem conservation and recreation); (2) Santuario (Sanctuary, for the preservation of sites of notable natural or historical importance); (3) Reserva Nacional (National Reserve, for sustainable extraction of certain biological resources); (4) Bosque de Protección (Protection Forest, to safeguard soils and forests, especially for watershed conservation); (5) Zona Reservada (Reserved Zone, for temporary protection while further study is under way to determine their importance); (6) Bosque Nacional (National Forest, to be managed for utilization); (7) Reserva Comunal (Communal Reserve, for local area use and management, with national oversight); and (8) Cotos de Caza (Hunting Reserve, for local use and management, with national oversight) (Rodríguez and Young 2000, p. 330). National reserves, national forests, communal reserves, and hunting reserves are managed for the sustainable use of resources (IUCN 1994, p. 2). The designations of National Parks, Sanctuaries, and Protection Forests are established by supreme decree that supersedes all other legal claim to the land and, thus, these areas tend to provide more habitat protection than unprotected areas.

Progress has been made in establishing protected areas and implementing protections where this species occurs: the TRZ, the Cerros de Amotape National Park and El Angolo Game Preserve form the Noroeste Biosphere Reserve. During the process

of establishing these protected areas, they were initially described as core zone, protected zone, and transition zone. The TRZ essentially encompassed El Caucho and Campo Verde, the buffer zone was essentially El Angolo Game Preserve, and the transition zone was the adjoining areas. The TRZ has had protected status since 1957, but it has always experienced pressures from timber harvest (ParksWatch 2005, p. 5). In 1970, a 10-year logging moratorium was implemented. In Tumbes, sawmills were closed, but some illegal timber harvest still occurred in the 1970s, despite government efforts (ParksWatch 2005, p. 5). There had been reports of some local Ecuadorians who crossed the border into the protected zone to hunt, cut wood, and sometimes establish lots for agriculture (Walker 2001, p. 2). However, the involvement of an NGO, ProNaturaleza, in 1988 increased the effectiveness of protections in this area. Their activities have included promoting local involvement, establishment of agreements between national and international organizations, restoration of mangrove ecosystems, regulation of extractive activities, and environmental education (ParksWatch 2005b, p. 7). The implementation of these additional protection measures are likely to also improve the habitat for the grey-cheeked parakeet.

##### Domestic Trade

Most of the parrots in the illegal trade come from the wild, where they have been harvested by small local communities and traded to other people who transport them to wildlife markets in major cities (Rosales *et al.* 2007 in Gastañaga *et al.* 2011, p. 77; Gonzales 2003, p. 438). Despite the illegal sale of this species in some Peruvian markets, efforts to curtail poaching and sale seem to be improving (note that Gonzales's study was conducted between 1996 and 1999). In 2007 and 2008, 385 grey-cheeked parakeets were found in five of the eight markets surveyed. The survey was conducted over four quarterly periods in these 20 markets in eight cities. However, in cities such as Cusco and Puerto Madonado, where INRENA and the ecological police have increased enforcement of wildlife protection laws, there were no grey-cheeked parakeets or other parrots found for sale (Gastañaga *et al.* 2011, p. 82). The illegal parrot trade has decreased in these areas; indicating that when enforcement is in place, protections are effective.

##### International Wildlife Trade

Removal of this species from the wild for the pet trade had the greatest impact

on this species. In 1981, the grey-cheeked parakeet was listed in Appendix II of CITES, and in 1992, this species was protected by the WBCA. The WBCA effectively shut down imports of this species into the United States; one of the largest importers of this species. CITES requires CITES Parties to have in place adequate legislation for its implementation. Through Resolution Conf. 8.4 (Rev. CoP15), the Parties to CITES adopted a process, termed the National Legislation Project, to evaluate whether Parties have adequate domestic legislation to successfully implement the Treaty (CITES 2010b, pp. 1–5). In reviewing a country's national legislation, the CITES Secretariat evaluates factors such as whether a Party's domestic laws designate the responsible Scientific and Management Authorities, prohibit trade contrary to the requirements of the Convention, have penalty provisions in place for illegal trade, and provide for seizure of specimens that are illegally traded or possessed. The Government of Peru was determined to be in Category 1, which means they meet all the requirements to implement CITES. Ecuador was determined to be in Category 2, with a draft plan, but not enacted (<http://www.cites.org>, SC59 Document 11, Annex p. 1). The international legal trade in this species has substantially decreased and is now negligible. As discussed under factor B, between 2000 and 2009, only 12 live specimens were reported in international trade (UNEP–WCMC); and only one was from a range country (Peru). With respect to international trade, the implementation of the WBCA and CITES, and the Governments of Peru and Ecuador have effectively controlled international trade of this species. Based on the best available information, the Governments of Ecuador and Peru are adequately enforcing their respective legal frameworks. Based on the decrease in reported trade, we believe that international trade has been adequately curtailed by regulatory mechanisms.

#### Summary of Factor D

We considered the adequacy of existing regulatory mechanisms to protect the grey-cheeked parakeet. Peru and Ecuador have enacted numerous laws and regulatory mechanisms to protect and manage wildlife and their habitats. Studies by the Peruvian Society for Environmental Law (SPDA) concluded that there are approximately 5,000 laws and regulations directly or indirectly related to environmental protection and natural resource conservation in Peru. In 2001, Muller

(2001, pp. 1–2) indicated that many of these are not effective due to limited implementation and/or enforcement capability. However, one of the most significant threats to the species prior to the 1990s was the international pet trade, but this trade has been negligible since 2000. Both Ecuador and Peru's economies are improving, and both countries are implementing many projects and mechanisms that are having a positive impact on this species and its habitat.

The grey-cheeked parakeet is listed as “vulnerable” under both Ecuadorian and Peruvian law. It occurs within at least four protected areas in Peru and Ecuador. This species is commonly observed in both Ecuador and Peru in protected areas; and flocks of this species are frequently observed. Some habitat degradation continues, including within protected areas (see factor A). However, we find that the existing regulatory mechanisms are adequate to mitigate these activities throughout the grey-cheeked parakeet's range. The most significant threat, poaching for the international pet bird trade, has declined significantly, and the population has had time to recover. There is no indication that the population is currently declining; it appears to be thriving in protected areas based on numerous recent birding expeditions. The international pet trade that contributed to the species' past decline, is now negligible.

Other factors that influenced our decision are that these governments are both implementing reforestation efforts (see factor A) and forest conservation programs. Lands are being purchased and are converted to reserves. Ecotourism such as birding trips in these reserves, which in part provides funding, appears to be prevalent in the Tumbesian region. Although some limited poaching may continue to occur, there is no evidence to suggest that they are having significant population level effects. This species exists in several protected habitats and is commonly observed throughout its range. There is no evidence that its population is still declining (WLT 2011, p. 2; Woods 2010, p. 34, Elwonger *et al.* 2004, p. 3; Van den Schoor, 2007). It is observed regularly in three of Ecuador's protected reserves (Jorupe, Buenaventura, and Cerro Blanco Reserve), it was observed in El Canclón Lagoon (Alava *et al.* 2007) and in Campo Verde in 2006; and in Peru's TRZ. The grey-cheeked parakeet is also protected under CITES and the WBCA, which we find have been effective in mitigating the impact to this species from international trade. Because there have been so few

individual live grey-cheeked parakeets in trade since 2000, we believe that international trade controlled via valid CITES permits is not a threat to the species. Based on the best available scientific and commercial information, we find that inadequate mechanisms are not a threat to the grey-cheeked parakeet in any portion of its range now or in the future.

#### E. Other Natural or Manmade Factors Affecting Its Continued Existence

##### El Niño Events

The arid terrestrial ecosystem of northwest Peru, where the grey-cheeked parakeet occurs, is influenced by El Niño events (Rodríguez *et al.* 2005, p. 1), which has the potential to have profound and long-lasting effects (Mooers *et al.* 2007, p. 2; Holmgren *et al.* 2006a, p. 87). An El Niño weather phenomenon in 1982–1983, caused widespread flooding in some parts of the country and severe droughts in others (<http://www.state.gov/r/pa/ei/bgn/35762.htm>, accessed May 5, 2011). El Niño–southern oscillation (ENSO) cycles increase the risk of fire because these events are often followed by years of extremely dry weather (Block and Richter 2007, p. 1). Accumulated biomass dries and adds to the fuel load in the dry season (Power *et al.* 2007, p. 898; Block and Richter 2007, p. 1). Evidence suggests that the fire cycle in Peru has shortened, particularly in coastal Peru and west of the Andes (Power *et al.* 2007, pp. 897–898), which could have broad ecological consequences (Block and Richter 2007, p. 1; Power *et al.* 2007, p. 898), and ENSO cycles have increased in periodicity and severity (Richter 2005, pp. 24–25). However, research suggests that ENSO events can also have positive rather than negative effects. The amount of rainfall during an El Niño year can be more than 25 times greater than during normal years in northern Peru (Holmgren *et al.* 2006a, p. 90; Rodríguez *et al.* 2005, p. 2). El Niño events are important triggers for regeneration of plants in semiarid ecosystems, particularly in the dry forest of northwest Peru (Holmgren *et al.* 2006a, p. 88; Lopez *et al.* 2006, p. 903; Rodríguez *et al.* 2005, pp. 2–3). During El Niño events, plant communities and barren lands are transformed into lush vegetation, as seeds germinate and grow more quickly in response to increased rainfall (Holmgren *et al.* 2006a, p. 88; Holmgren *et al.* 2006b, pp. 2–8; Rodríguez *et al.* 2005, pp. 1–6). This species is a food generalist and exists in a climate zone that is fairly stable (it is in a narrow latitudinal band). Thus, we

find that the grey-cheeked parakeet is likely to be less affected by ecosystem changes due to El Niño events than other species.

#### Tourism

Tourism can have both positive and negative aspects. One form of tourism, ecotourism, has the potential to have a positive effect by providing economic incentives for communities to protect their natural areas. This in turn makes them less reliant on the resources within a protected area, and encourages sustainable practices. In many cases, local communities may contribute to the habitat degradation or remove the species from the wild. Ecotourism projects, by creating alternative sources of income, can be a way to create awareness of a species' plight, and also can attract conservation funding to an area. Community conservation projects have demonstrated that if local communities understand the benefit of conserving the resource and are provided alternative sources of income, they have incentive to protect the resource rather than overutilize the resource (Lee 2010, p. 13). There is increasing awareness to minimize environmental impacts of visitors. Ecotourism is being conducted in a manner that is not disturbing to the species. As of 2005, TRZ was attracting 500 tourists annually, and the tourists generally only visited particular areas (ParksWatch 2005b, p. 11). Based on the positive effects of low-impact ecotourism, and also the potential positive effects of ecotourism, we do not find that tourism has a significant impact on the species.

#### Summary of Factor E

We evaluated other natural or manmade factors that might affect the continued existence of the grey-cheeked parakeet. Neither El Niño events nor tourism were found to be threats to the species. The grey-cheeked parakeet exists in protected areas in both Ecuador and Peru that provide suitable habitat. Lowland bird species such as the grey-cheeked parakeet are adapted to El Niño events, and this climate zone is fairly stable in its weather patterns. Tourism occurs at low levels, and the tourism is likely very minimal in protected areas where this species exists. Based on the best available scientific and commercial information, we find that other natural or manmade factors are not a threat to the grey-cheeked parakeet in any portion of its range now or in the future.

#### Finding

As required by the Act, we considered the five factors in assessing whether the

grey-cheeked parakeet is threatened or endangered throughout all of its range. Section 3 of the Act defines an "endangered species" as "any species which is in danger of extinction throughout all or a significant portion of its range" and a "threatened species" as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."

We examined the best scientific and commercial information available regarding the past, present, and future threats faced by the grey-cheeked parakeet. We reviewed the petition, information available in our files, and other available published and unpublished information, and we consulted with experts. We believe the species does not warrant listing for the following reasons. There are no indications that the population of this species is currently declining. Both IUCN and BLI's population trend justification are from population studies conducted prior to 1995; and the categorization was primarily based on rapid rates of population decline caused by past trapping for the international pet trade. The EU ban and the implementation of the WBCA effectively halted the international trade in this species. International trade, which was the primary reason for its decline prior to the 1990s, is now negligible. Further, both Peru and Ecuador, the range countries for this species, categorize this species as vulnerable.

Additionally there has been significant NGO involvement in the protection of endemic bird areas in the range of grey-cheeked parakeet. The World Land Trust (WLT) indicated that in a recently purchased area near the Buenaventura Reserve, the grey-cheeked parakeet has increased locally, but did not give specific population estimates (WLT 2011, pp. 1–2). Habitat loss is often a threat to wildlife; however, in this case, both Peru and Ecuador are implementing reforestation programs, and this species exists in several protected areas, as well as areas outside of protected areas. The species appears to adapt to altered habitat (Best *et al.* 1995, p. 233). Several birding surveys have focused on the Tumbesian biome, which extends 130,000 km (80,778 mi) into southern Ecuador and northern Peru. Surveys in the early 2000s to determine biodiversity in the Loja Province observed this species fairly regularly in forested areas. The Tumbesian area still has primary and secondary forested areas that are protected—in Ecuador, this species exists in MCER, Jorupe Reserve, Buenaventura Reserve, and Cerro

Blanco Reserve, and in Peru, the species exists in Tumbes Reserved Zone (TRZ), specifically at El Caucho and Quebrada Faical.

Habitat loss and degradation (Factor A) and poaching (Factor B) still occur in Peru and Ecuador. We acknowledge that these activities affect individuals, but there is no evidence that they are having significant impacts such that they are threats to the species. We find that these activities are not of sufficient imminence, intensity, or magnitude to indicate that the grey-cheeked parakeet is in danger of extinction (endangered) or likely to become endangered within the foreseeable future (threatened), throughout its range. The distribution of its population in many reserves in Ecuador and Peru helps contribute to the viability of the species overall; and its distribution is providing a margin of safety for the species to withstand catastrophic events, strengthening the redundancy of the species. This species exists in protected habitat in both countries, and legal international trade, formerly the most significant threat to this species, has been very limited since international trade has been regulated. Illegal domestic trade (Factor B), while occurring in some areas, is not having a significant impact such that it is a threat. Disease and predation (Factor C) are not impacting this species such that they are threats. Additionally, the involvement of NGOs in protecting more of this species' habitat is likely to positively impact the species. Based on the lack of threats to the grey-cheeked parakeet throughout its range, as described above, we determine that the grey-cheeked parakeet is not in danger of extinction or likely to become so within the foreseeable future. Therefore, we find that listing the grey-cheeked parakeet as a threatened or endangered species is not warranted.

We request that you submit any new information concerning the status of, or threats to, the grey-cheeked parakeet or its habitat to our Branch of Foreign Species (see **ADDRESSES**) whenever it becomes available. New information will help us monitor this species and encourage its conservation.

#### Significant Portion of the Range

Having determined that the grey-cheeked parakeet is not in danger of extinction or likely to become so within the foreseeable future throughout all of its range, we must next consider whether there are any significant portions of the range where the grey-cheeked parakeet is in danger of extinction or is likely to become endangered in the foreseeable future.

The Act defines an endangered species as one “in danger of extinction throughout all or a significant portion of its range,” and a threatened species as one “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” The term “significant portion of its range” is not defined by the statute. For the purposes of this finding, a portion of a species’ range is “significant” if it is part of the current range of the species and it provides a crucial contribution to the representation, resiliency, or redundancy of the species. For the contribution to be crucial it must be at a level such that, without that portion, the species would be in danger of extinction or likely to become so in the foreseeable future.

In determining whether a species is threatened or endangered in a significant portion of its range, we first identify any portions of the range of the species that warrant further consideration. The range of a species can theoretically be divided into portions in an infinite number of ways. However, there is no purpose to analyzing portions of the range that are not reasonably likely to be significant and threatened or endangered. To identify only those portions that warrant further consideration, we determine whether there is substantial information indicating that: (1) The portions may be significant, and (2) the species may be in danger of extinction there or likely to become so within the foreseeable future. In practice, a key part of this analysis is whether the threats are geographically concentrated in some way. If the threats to the species are essentially uniform throughout its range, no portion is likely to warrant further consideration. Moreover, if any concentration of threats applies only to portions of the species’ range that clearly would not

meet the biologically based definition of “significant” (*i.e.*, the loss of that portion clearly would not reasonably be expected to increase the vulnerability to extinction of the entire species to the point that the species would then be in danger of extinction or likely to become endangered in the foreseeable future), such portions will not warrant further consideration.

If we identify portions that warrant further consideration, we then determine their status (*i.e.*, whether in fact the species is endangered or threatened in a significant portion of its range). Depending on the biology of the species, its range, and the threats it faces, it might be more efficient for us to address either the “significant” question first, or the status question first. Thus, if we determine that a portion of the range is not “significant,” we do not need to determine whether the species is endangered or threatened there; if we determine that the species is not endangered or threatened in a portion of its range, we do not need to determine if that portion is “significant.”

Applying the process described above for determining whether a species is threatened in a significant portion of its range, we considered status first to determine if any threats or potential threats acting individually or collectively threaten or endanger the species in a portion of its range. We find that the potential threats evaluated are not of sufficient imminence, intensity, or magnitude to indicate that the grey-cheeked parakeet is in danger of extinction (endangered), or likely to become endangered within the foreseeable future (threatened), throughout all of its range. Therefore, we find that listing the grey-cheeked parakeet as a threatened or endangered species is not warranted throughout all of its range.

### Conclusion of 12-Month Finding

We do not find that the grey-cheeked parakeet is in danger of extinction now, nor is it likely to become endangered within the foreseeable future, throughout all or a significant portion of its range. Therefore, listing the species as endangered or threatened under the Act is not warranted at this time. We request that you submit any new information concerning the status of, or threats to, the grey-cheeked parakeet to our Endangered Species Program, Branch of Foreign Species (see **ADDRESSES**) whenever it becomes available. New information will help us monitor this species and encourage its conservation. If an emergency situation develops for the grey-cheeked parakeet or any other species, we will act to provide immediate protection.

### References Cited

A list of all references cited in this document is available at <http://www.regulations.gov>, Docket No. FWS–R9–ES–2011–0071, or upon request from the U.S. Fish and Wildlife Service, Endangered Species Program, Branch of Foreign Species (see **FOR FURTHER INFORMATION CONTACT**).

### Author

The primary authors of this notice are staff members of the Branch of Foreign Species, Endangered Species Program, U.S. Fish and Wildlife Service.

### Authority

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: September 29, 2011.

### Cynthia T. Martinez,

*Acting Director, Fish and Wildlife Service.*

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