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Overexploitation of Parrots in the Neotropics

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Overexploitation and habitat destruction are the major threats to parrots or psittacines worldwide. Among other threats, high levels of illegal extraction of parrots from their natural habitats are a real threat to parrot biodiversity in the Neotropics (Figure 1; Collar and Juniper 1992; Pires 2012). Because most long-lived parrots have low reproductive rates, low natural survival of chicks and limited availability of nesting sites (Nycander et al. 1995), they are particularly sensitive to overexploitation. As a consequence, parrots are among the most threatened Neotropical bird families with over one third of parrot species at risk of extinction (Collar et al. 1994; IUCN 2014) and one, Spix's macaw (*Cyanopsitta spixii*), possibly extinct in the wild (Snyder et al. 2000). Parrots are commonly targeted by poachers and illegal traders because of the high value they have as pets (Beissinger and Bucher 1992; Snyder et al. 2000; Wright et al. 2001). Given that populations of many species are declining (IUCN 2014), plans to control the illegal trade of parrots are urgently required to ensure the survival of Neotropical parrot diversity.

As an example, take the case of Peru. This country has an extraordinary diversity of parrots: 52 native species, with more than 30 occurring in the Amazon region (Schulenberg et al. 2007). Despite Peruvian efforts to regulate wildlife trade, illegal extraction and commercialization of parrots continues. The history of this problem goes back to the 1970-80s, when there was high demand and no regulations for wildlife trade in the international markets (Rosales et al. 2007). The Peruvian government ratified the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES¹) in 1975. However, in the 1980s Peru saw an increase in the illegal traffic of parrots. It was not until 2000 that the Peruvian government passed a national law to regulate the trade of wild species; however, it

has not eased the problem. In 2010, Gastañaga et al. reported that in a single year ~2,500 individuals of 32 species of parrots were available for sale in 20 local markets across the country. Among these species, one is listed as endangered, two as vulnerable and one as near threatened by the International Union for Conservation of Nature (IUCN). Overall, 26 species were being illegally traded.

Although Gastañaga et al. (2010) found that parrots were on sale across the country, the highest supply and diversity of parrots was in a market in the Amazon, also where a high diversity of parrots occurs (Schulenberg et al. 2007). They reported more than 1,000 individuals of 27 species being commercialized without any restrictions, including the gray-cheeked parakeet (*Brotogeris pyrrhoptera*), an endangered species (IUCN 2014). A similar study in Bolivia by Herrera and Hennessey (2007) reported up to 9,000 individuals of 25-27 parrot species available for sale in a market in Santa Cruz over a 2.5 year period.

As impressive as the statistics about birds in the illegal markets are, they underestimate the real effect of poaching on parrot populations. First, there is high bird mortality associated with poaching, with up to 60% of birds captured dying before they reach the market (Iñigo-Elias and Ramos 1991), thus the numbers of birds seen in the markets greatly underestimates how many are taken from the wild. Second, poaching usually occurs at nests, and unfortunately, mortality rates produced by nest poaching can be higher than rates produced by natural causes (Wright et al. 2001; González 2003). Despite the negative impacts, poaching is yet a common practice. A study conducted in Northeastern Peru reports nests of 33 species being illegally poached by local people to commercialize the birds in local markets (González 2003).

Further, the illegal harvesting of nests not only affects parrot populations directly but also reduces the

¹ CITES is an international agreement among 145 governments, developed to ensure that international trade in specimens of wild animals and plants does not threaten their survival. Each country has to adopt its own domestic legislation to ensure that CITES is implemented at the national level. (Modified from www.cites.org.)



Figure 1. An example of Neotropical parrot diversity: (a) *Ara severus* (photo by Adriana Bravo); (b) *Ara macao* (photo by Adriana Bravo); (c) *Alipiopsitta xanthops* (photo by Luciano Naka); (d) *Aratinga solstitialis* (photo by Luciano Naka); (e) *Aratinga aurea* (photo by Luciano Naka); (f) *Aratinga pertinax* (photo by Luciano Naka); and (g) *Brotogeris chiriri* (photo by Luciano Naka).

availability of habitat suitable for reproduction, which is already limited by deforestation (Snyder et al. 2000). Many natural nests are destroyed during the poaching process, particularly in the case of parrot species that nest inside fragile stands of dead palms (González 2004). Thus, considering that on average 30% of nests of 21 parrot species in 14 Neotropical countries suffer some degree of nest poaching (Wright et al. 2001), poaching is an important threat to parrots reproduction.

Are there solutions to this problem? Global and local scale approaches should be considered to reduce illegal parrot trade and its devastating consequences on wild parrot populations. International bans can help to decrease the illegal parrot trade (Sodhi et al. 2011). Wright et al. (2001) found a decrease of 28% in nest poaching for ten Neotropical species of parrots after the US Congress approved the Wild Bird Conservation Act in 1992, banning the import of all bird species listed by



CITES. Similarly, after the European Union (EU) imposed a restriction on imports of wild birds from Asia in 2005 due to an outbreak of bird influenza, the number of exported birds from South East Asia came to a halt between 2006-2007 (Nijman 2010).

At a small or local scale, protected areas can play an important role in reducing nest poaching (Wright et al. 2001; Pain et al. 2006). In the Neotropics, Wright et al. (2001) found a significant reduction of nest poaching levels when comparing four species of parrots occurring in protected areas and non-protected areas. Pain et al. (2006) found a reduction in nest poaching for parrot species in protected areas from Africa, Asia and Australasia. Another local approach is strict enforcement of the law. Gastañaga et al. (2010) report that in two large cities in Southern Peru, the illegal trade has dramatically declined due to strict permitting control from the local authorities and educational campaigns launched to increase awareness of parrot threats and conservation. Another successful example is the recovery of the St Lucia parrot (*Amazona versicolor*), endemic to Santa Lucia Island, from the brink of extinction. In the late 1970s, the government launched massive educational efforts towards the protection and conservation of the species (Snyder et al. 2000). Population numbers are increasing steadily, and the species has been given a lower threat rating of vulnerable by the IUCN (IUCN 2014).

In addition, sustainable harvesting has been proposed as an alternative to maintain parrot populations over time (Beissinger and Bucher 1992; Beissinger 2001). However, accurately estimating the number of parrots available for harvesting, requires considerable knowledge of the population's demography.² Unfortunately, such data are scarce for most species (Beissinger 2001). In addition, parrots suffer high mortality due to stress, disease, or injuries when they are removed from the nests (Juniper and Parr 1998), and sustainable quotas may not take this into account. Finally, successful implementation of sustainable harvesting in developing countries will require strict

regulations and control of local authorities to avoid overharvesting (Beissinger and Bucher 1992; Snyder 2000); this may be a challenge, knowing the limited resources most countries have for these activities. For instance, in Peru, Gastañaga et al. (2010) estimated that 31,000 canary-winged parakeets were being traded in local markets, when the number set by the Peruvian law was 1,250 individuals. Thus, although sustainable harvesting may work in some countries, it will be challenging in countries with few resources available for conservation.

CASE STUDY QUESTIONS

1. What is the problem that parrots are facing in the Neotropics? Please explain it as **clearly and completely** as you can (~150 words).
2. List two actions that have been shown successful at decreasing illegal trade of parrots. Be as **specific** as possible, and **briefly explain** how each one would help mitigate the problem.
3. You are reading a newspaper when you see an article proposing that trade regulations for most Neotropical parrot species be lifted, based on new population estimates from Peru showing that parrot populations are healthier than previously thought. The author of the article cites the new population estimates, and available estimates of parrot sales in local Peruvian markets, to argue that most populations can sustain this kind of exploitation over time. List at least three assumptions the author is making.
4. Imagine that as a congressional representative in an Amazonian country, you have to vote on a law proposal submitted by the country's Association of Aviculturists. The law proposes to end the ban on extraction of parrots from the wild and their commercialization arguing that limiting legal trade intensifies the illegal trade. Specifically, they argue that captive breeding is a secure way to conserve and support the trade of threatened parrot species, which can eventually be reintroduced. In addition, they argue that

² These estimates are usually calculated using the Maximum Sustainable Yield (MSY). MSY is the maximum number of individuals (or maximum catch) that can be harvested indefinitely from a population without threatening its survival.



by breeding birds, sale prices will become cheaper and thus outcompete the illegal trade.

Before the vote, you have 5 minutes to speak in support or in disagreement with the proposal. Write down whether you will or will not support this law and clearly explain why.

EVALUATING THE ANSWERS

The critical thinking rubric (Rhodes 2010) provided below is a general guide to evaluate the answers to questions 1-4 and improve them if necessary.

This rubric has four criteria, or dimensions, that are considered important parts of critical thinking: 1) explanation of the issues to be considered critically; 2) evidence; 3) influence of context and assumptions; and 4) conclusions and related outcomes. Each of the questions of this case study (1-4) loosely corresponds to each of the dimensions 1-4 of the rubric in the same order.

1. What do you consider is the skill of the student in each of the four criteria of critical thinking? Write down your answers below.
 - a. Use question 1 to assess the **Explanation of issues to be considered critically** criterion
 - b. Use question 2 to assess the **Evidence** criterion
 - c. Use question 3 to assess the **Influence of context and assumptions** criterion
 - d. Use question 4 to assess the **Conclusions and related outcomes** criterion
2. Using the rubric as a guide, develop alternative answers for the questions you think have a low level of achievement (“Levels 1-2”) as described in the rubric. You will present your re-analysis to the class.

REFLECTING ON YOUR OWN CRITICAL THINKING

The rubric can also be used to reflect on which of the different aspects or dimensions of critical thinking is found to be the most challenging.

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CRITICAL THINKING RUBRIC

Modified from the AAC&U VALUE Rubric by The Network of Conservation Educators & Practitioners (NCEP)

Critical thinking is a habit of mind characterized by the comprehensive exploration of issues, ideas, evidence, and events before accepting or formulating an opinion or conclusion.

*Levels of achievement (1-4) range from **Beginning** to **Exemplary**.*

	1	2	3	4
Explanation of issues to be considered critically	States the issue/problem without clarification or description.	States the issue/problem but description leaves some terms undefined, ambiguities unexplored and/or backgrounds unknown.	States, describes and clarifies issue/problem so that understanding is not seriously impeded by omissions.	Clearly states and comprehensively describes issue/problem delivering all relevant information necessary for full understanding.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Selects evidence not relevant to the issue. Takes information from source(s) without any interpretation/evaluation. Conflates cause and correlation, facts and opinion. Takes viewpoints of experts as fact, without question.	Selects evidence somewhat relevant to the issue. Takes information with some interpretation/evaluation, but not enough to develop a coherent analysis or synthesis. Takes viewpoints of experts mostly as fact, with little questioning.	Selects evidence mostly relevant to the issue. Takes information with enough interpretation/evaluation to develop a coherent analysis or synthesis. Questions viewpoints of experts.	All evidence selected is relevant to the issue. Takes information with enough interpretation/evaluation to develop a comprehensive analysis or synthesis. Thoroughly questions viewpoints of experts.
Influence of context and assumptions	Shows an emerging awareness of assumptions and context. Does not recognize context or assumptions and underlying implications, or does so superficially.	Identifies some ways in which relevant contexts affect the issue. Acknowledges various sides of an issue. May be more aware of others' assumptions than one's own (or vice versa).	Identifies and examines own and other's assumptions and several relevant contexts when describing/ evaluating an issue.	Fully analyzes and synthesizes own and others' assumptions. Carefully evaluates relevance of contexts when describing/ evaluating an issue.
Conclusions and related outcomes <i>Ability to make judgments and reach a position, drawing appropriate conclusions based on the available information, its implications and consequences.</i>	Position is too simple or obvious. Conclusion is inconsistently tied to the information discussed. Dismisses evidence without adequate justification. Related outcomes (consequences and implications) are not mentioned, or oversimplified.	Position begins to acknowledge complexity of an issue, such as different sides, knowledge gaps, or alternative solutions. Conclusion is logically tied to information, but evidence may be selected to bolster own arguments. Some related outcomes (consequences and implications) are identified clearly.	Position acknowledges complexity of an issue; refers to different sides, knowledge gaps, alternative solutions. Conclusion is logically tied to a range of information, including opposing viewpoints. Consequences and implications are identified clearly.	Position takes into account the complexity of an issue. Conclusions and related outcomes (consequences and implications) are logical, reflect student's informed evaluation and are qualified as the best available given evidence and context.