

Non-detriment finding for *Poicephalus robustus* (Cape parrot)

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Summary of findings

The order Psittaciformes is included in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). In terms of Article IV of the Convention, an export permit shall only be granted for an Appendix II species when a Scientific Authority of the State of export has advised that such export will not be detrimental to the survival of that species. This document details the undertaking of a NDF (Figure 1) for *Poicephalus robustus* (Cape parrot) and is based on the best current available information. This information is current as of December 2015.

The biological characteristics of *Poicephalus robustus* render it highly sensitive to harvesting. Cape parrots are long-lived with relatively low reproductive rates. Individuals can live up to 30 years in captivity and only start breeding at 4-5 years of age. Of the four eggs laid on average only one or two of the eggs are hatched and fledged. The species is furthermore an extreme specialist with respect to habitat (preferring Afromontane Southern Mistbelt Forest) and diet (the kernels of yellowwood fruits when available and other forest fruits at other times). As a result of severe habitat loss and subsequent food shortages, the Cape parrot increasingly forages on commercial crops, e.g. pecan nuts, where the birds are vulnerable to pest control and capture. The dispersal efficiency of the Cape parrot is presumed to be poor, but this remains to be shown scientifically, and the species is sensitive to human activities.

Poicephalus robustus has a restricted and fragmented distribution within South Africa, occurring in the Eastern Cape (including the former Transkei) and KwaZulu-Natal (KZN), with a small fragmented relic population estimated at c. 100 individuals in Limpopo Province. Annual censuses conducted by the Cape Parrot Working Group (CPWG) for more than 15 years indicate an estimated global population size of 1000 - 1500 individuals, representing considerably less than 500 breeding pairs. Based on 15 years of survey data the population appears to be stable. However, there is also evidence of local declines, such as in the Karkloof area, KZN which may be a consequence of food shortages in the region.

At present the poor national status of the Cape parrot is not conducive for the sustainable utilisation of wild populations, although the income generated could theoretically sponsor conservation efforts. The species is listed as Endangered in the South African Red Data Book for Birds (2015), as critically endangered on the current Threatened or Protected species list (section 56 of the National Environmental Management: Biodiversity Act No. 10 (NEMBA) of 2004), as specially protected in KwaZulu-Natal and as a protected species in the Eastern Cape. Due to the International Union for Conservation of Nature (IUCN) and BirdLife International not recognising the grey-headed parrot and Cape parrot as two separate species, both taxa are together considered as Least Concern at a global level. The forest biome is the smallest biome in South Africa (covering 2% of the land surface), is very disjunct and is threatened by overharvesting. The deteriorating condition of yellowwood forests, which Cape parrots are dependent on, has negatively affected the species. While the ultimate threat to *P. robustus* is habitat loss through the degradation and reduction in Afromontane Southern Mistbelt Forest, the more recent, but also significant, threats are (a) infection and mortality caused by Psittacine beak and feather disease virus (PBFDV), and (b) local poaching and trade.

None of the wild population is strictly protected from harvesting due to the fragmented nature of its habitat and the local mobility of the species. The species is afforded legislative protection at both a provincial and national level, but this legislative protection is not a prohibition and therefore is not considered to be a strict protection measure. Permits are required for the harvesting of Cape parrots but currently none are issued. It however appears that there is nevertheless an uncertain level of illegal harvesting that has been ongoing since the 1960s. The high demand for the species from aviculturists, owing to the Cape parrot's rarity, has caused an escalation in

its market value to around R100 000 per pair of birds. Nest poaching is known to take place, with fledglings sold on the roadside each year, but the magnitude of illegal off-take is currently unknown.

The wild population is not managed, although it is censused annually by the CPWG. A captive population of about 100 birds is monitored by the Pan African Association of Zoos and Aquaria (PAAZAB) Stud Book. Currently, there is no national management plan for the conservation and sustainable use of the Cape parrot or its habitat. A provisional Management Plan that forms part of BirdLife South Africa's National Action Plan for Cape parrot has only been partly implemented. Overall there is a low confidence in the harvest management of the Cape parrot primarily due to a lack of effective law enforcement brought about by limited human resources and transport, fragmentation of management in key areas where the species occurs and a lack of co-ordination between various role players.

Only relatively recently (in 2002 and again in 2005) has the Cape parrot been recognised as a separate species from the brown-necked parrot (*P. fuscicollis fuscicollis*) and the grey-headed parrot (*P. f. suahelicus*). But the refusal of BirdLife International and the IUCN to recognize the grey-headed parrot and Cape parrot as two separate species has complicated the management and monitoring of international trade in harvested and captive bred birds and may have had a detrimental impact on the survival of the Cape parrot in the wild. National monitoring of exports has also not been possible because the Cape parrot was until recently not recognized as a separate species by the Parties to CITES and trade records therefore do not distinguish between grey-headed parrots and Cape parrots. The non-detriment finding undertaken for *P. robustus* (Cape parrot) demonstrates that any international and local trade in wild specimens poses a high risk to this species (Figures 1 and 2). The Scientific Authority is unable to state with any confidence that the trade in *P. robustus* from South Africa will not have a detrimental impact on the wild population. The Scientific Authority is therefore unable to issue a positive NDF for *P. robustus* at this time and trade must therefore be confined to captive-bred specimens. As chicks of many parrot species look alike, identifying Cape parrot chicks would be very difficult for law enforcers. As such only captive-bred birds once fledged with juvenile plumage or older can be traded.

Since the extent of illegal trading in this species is unknown, it is recommended that measures be taken to ensure that no wild specimens are traded as "captive-bred"; specifically all specimens for export must be verified as offspring of captive birds through DNA analyses. All shipments of grey-headed parrots must also be checked carefully by inspectors to ensure that they do not include any Cape parrots. The South African National Biodiversity Institute (SANBI) has developed an identification guide for this purpose.

The following is recommended to improve the management of captive-bred Cape parrots:

- i) captive-bred birds must be recorded in the Pan African Association of Zoos and Aquaria Stud Book;
- ii) captive-bred birds must be marked with closed rings and/or micro-chipped, and DNA fingerprinted;
- iii) breeders must keep records of breeding and mortality (dates of births and deaths, with blood samples taken from dead birds for DNA fingerprinting);
- iv) all breeders exporting Cape parrots internationally must be registered with the Management Authority in compliance with the TOPS and CITES regulations.
- v) A decision tree or inspection checklist to assist Environmental Management Inspectors with verifying specimens as "captive-bred" in accordance with CITES provisions must be developed by the Scientific Authority within 3 months of publication of this NDF.

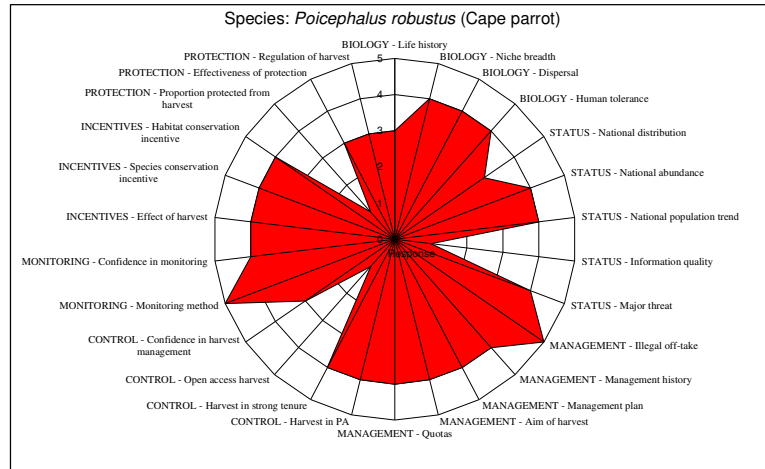


Figure 1: Radar chart summarizing the non-detriment finding assessment undertaken for *Poicephalus robustus* (Cape parrot) in South Africa in accordance with the CITES NDF checklist. Explanations of scores given are detailed in Table 1. Higher scores are indicative of higher risks to the species. The extensive area shaded in the radar chart demonstrates an overall high risk to the species.

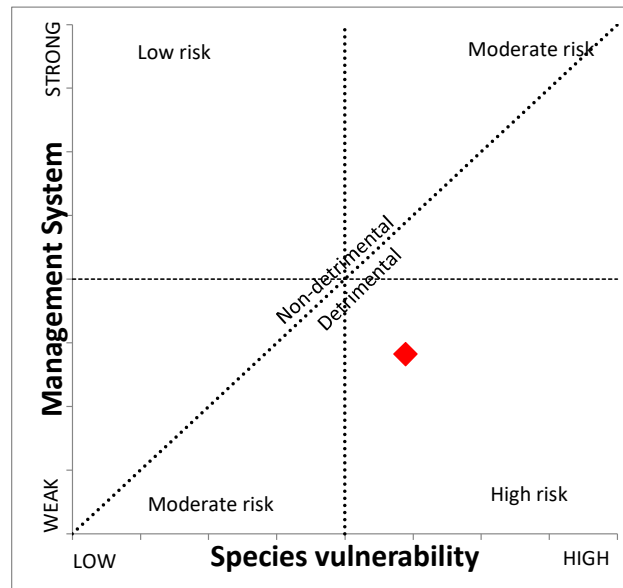


Figure 2: The risk of trading in *Poicephalus robustus* (Cape parrot) by South Africa as represented by the relationship between species vulnerability (biology and status) and the strength of the management system to which the species is subjected (management, control, monitoring, incentives, and protection). The figure shows that the species is at high risk and trade is detrimental.

Table 1: Detailed non-detriment finding (NDF) assessment for *Poicephalus robustus* (Cape parrot) in South Africa, undertaken in accordance with the CITES NDF checklist. Scores assigned to each question are indicated (bold text in shaded blocks) along with detailed explanations/justifications where relevant. Higher scores are indicative of higher risks.

Biological characteristics		
1. Life history: What is the species' life history?	High reproductive rate, long-lived	1
	High reproductive rate, short-lived	2
	Low reproductive rate, long-lived	3
	Low reproductive rate, short-lived	4
	Uncertain	5
The Cape parrot has a low reproductive rate and is likely to be long-lived. In captivity these birds can live up to 30 years. A Cape parrot starts breeding at 4-5 years of age in the wild, and probably breeds in alternate years (Wirminghaus et al., 2001). It is a secondary cavity nester, preferring tall, dead yellowwoods called "snags" (Downs & Symes 2004). Although four eggs are laid on average, only one or two are usually hatched and fledged. Post-fledging mortality rates are unknown. The sex ratio in the wild is likely skewed towards males, as it is in the captive population. Natural nest sites are limited, and artificial nest boxes are rarely used (Downs, CPWG). The lag effect of breeding following mast fruiting of yellowwoods is not well understood.		
2. Ecological adaptability: To what extent is the species adaptable (habitat, diet, environmental tolerance etc.)?	Extreme generalist	1
	Generalist	2
	Specialist	3
	Extreme specialist	4
	Uncertain	5
The Cape parrot is a forest specialist. It is an extreme specialist with respect to habitat, preferring Afromontane Southern Mistbelt forests, which makes up less than 0.5% of South Africa's land surface. It is selective in relation to nesting sites, being a secondary cavity nester preferring tall, dead yellowwoods. The Cape parrot however is a food nomadic, preferring the fruit kernels of yellowwood trees (<i>Afrocarpus</i> / <i>Podocarpus</i> spp.) when these are available but will also feed on the kernels of other forest fruit including <i>Harpephyllum caffrum</i> , <i>Celtis africana</i> , <i>Oleo capensis</i> , <i>Commiphora caryaefolia</i> , and the exotic and invasive <i>Melia azedarach</i> and <i>Acacia mollissima</i> at other times of the year. Fruit kernels of yellowwood trees are available from June through to November. Yellowwoods are mast fruiting species and these fruiting events can be separated by long intervals of six to seven years. Cape parrots have also been recorded to make long foraging trips to coastal forests and / or visit food sources outside of forests, including commercial orchards and gardens during the summer months when food is scarce. Due to the continued decline in forest patches and subsequent food shortages, the birds have increasingly made use of commercial crops e.g. pecan nuts, where they are vulnerable to control methods. In the Amathole region, <i>Podocarpus</i> fruits only appear in their diet sporadically during the breeding season (September – January), while wild plums (<i>Harpephyllum caffrum</i>), pecan nuts, cherries, and acorns feature more prominently. The birds often flock at particular fruiting trees when other fruit sources are generally in short supply. Feeding flock size thus increases with the relative food resource abundance of a specific feeding site.		
3. Dispersal efficiency: How efficient is the species' dispersal mechanism at key life stages?	Very good	1
	Good	2
	Medium	3
	Poor	4
	Uncertain	5
The dispersal efficiency of the Cape parrot is presumed to be poor but this remains to be shown scientifically. Cape parrots are food nomadics moving between forest patches depending on food availability. They are good flyers and regularly commute between coastal forests and inland forests. Historically this occurred in KwaZulu-Natal (KZN) but still occurs in the Eastern Cape. The species shows some site fidelity returning to certain forests to roost but limited data are available on Cape parrot movements. Skead (1964) suggested daily movements of 90 km while foraging. Due to forest fragmentation and patchiness of forest fragments four subpopulations have been identified (Coetzer 2016). These include the Magoebeskloof subpopulation in Limpopo Province, the southern KZN subpopulation (Karkloof region), the Umtata-Port St. Johns subpopulation in northern Eastern Cape and the Hogsback-Amatole subpopulation in the former Transkei. A recent study showed that there are three geographically correlated genetic clusters within the Cape parrot population. A southern group found in the Eastern Cape, a central group in KZN and a distinct third group in Limpopo. The southern and central groups show signs of gene flow between them, while the northern Limpopo group is isolated and genetically distinct from the others (Coetzer, 2016; Coetzer et al. In prep). Cape parrots have however been observed in years following		

extreme heat, rain or drought to forage outside of forest in localities where they have not previously been observed (Downs et al. 2014). When birds do not have the historical knowledge learned from parents, they may have difficulty in locating new food sources.

4. Interaction with humans: Is the species tolerant to human activity other than harvest?	No interaction	1
	Pest / Commensal	2
	Tolerant	3
	Sensitive	4
	Uncertain	5

Cape parrots are sensitive to human activities. The forest biome is the smallest biome in South Africa (covering 2% of the land surface), is very disjunct and is threatened by overharvesting. The deteriorating condition of yellowwood forests, which Cape parrots are dependent on, has negatively affected the species. The Cape parrot mainly occurs in the Afromontane Southern Mistbelt forests from the Eastern Cape to KZN. These forests were historically logged by pioneer settlers and, despite legislation protecting forests, are still logged in parts of the Eastern Cape legally and elsewhere illegally. Yellowwoods are mast fruiting species and do not fruit each year, and when the crop fails, the parrots may be forced to feed in pecan nut orchards. They are also likely to feed outside of forests when other suitable forest fruits are unavailable. In recent years, due to the continued decline in Afromontane Southern Mistbelt forests and subsequent food shortages, the birds have increasingly made use of commercial crops, e.g. pecan nuts, where they are vulnerable to control methods. The main period of feeding on pecans is from April – May. Cape parrots cause damage to pecan nut crops in the Eastern Cape that can be locally severe, although at a national scale the impact is small. The birds may be chased from the crops and on occasion have been shot. They are not regarded as pests in communal areas. Cape parrots may be targeted in Adelaide in the future due to the birds becoming a new pest in the pecan nut orchards there. Wild Cape parrots may live in close contact with people at certain times of the year (Hogsback, Alice, King William's Town, Stutterheim, Magoebaskloof, Creighton, Bulwer, Karkloof, Dargle and parts of the former Transkei). Cape parrots have been seen feeding on the ground and several have been killed by dogs in King William's Town and Adelaide. They could also be easily captured at well-known drinking points in King William's Town, Hogsback and Alice.

National status

5. National distribution: How is the species distributed nationally?	Widespread, contiguous in country	1
	Widespread, fragmented in country	2
	Restricted and fragmented	3
	Localized	4
	Uncertain	5

The Cape parrot is South Africa's only endemic parrot. The Cape parrot population is restricted and fragmented, occurring in the Eastern Cape (Umtata-Port St. Johns subpopulation), the former Transkei (southern subpopulation) and KwaZulu-Natal (northern subpopulation), with a small fragmented population in the Magoeboskloof region of Limpopo Province (relic population) (Figure 3). The current range of the Cape parrot is restricted to a mosaic of Afromontane Southern Mistbelt forests from Hogsback in the Eastern Cape through to the Balgowan and Karkloof areas of KZN. Previously they were more widespread in KwaZulu-Natal, the former Transkei and the Eastern Cape but are now locally extinct from the Afromontane Southern Misbelt forests north of Balgowan and along the escarpment through Mpumalanga to Limpopo Province.

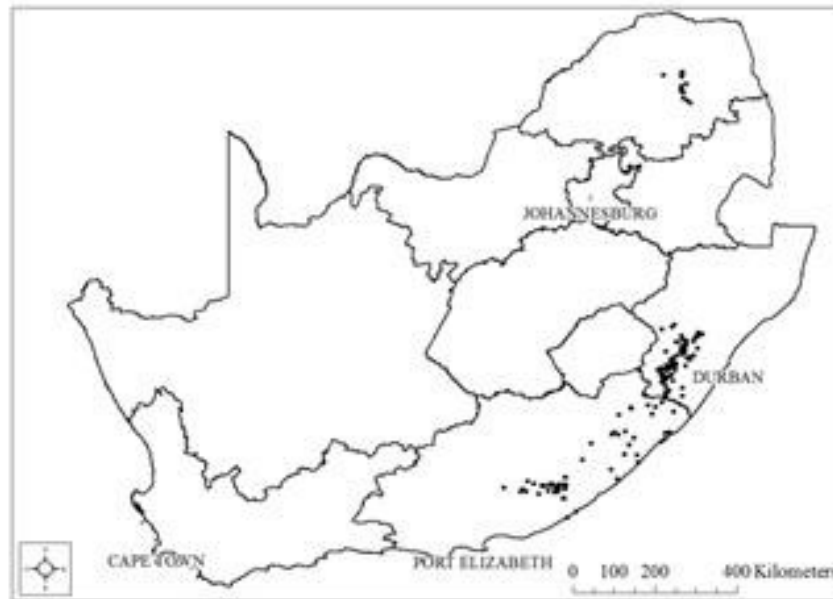


Figure 3: Distribution of the Cape parrot within South Africa (Downs et al. 2014)

6. National abundance: What is the abundance nationally?	Very abundant	1
	Common	2
	Uncommon	3
	Rare	4
	Uncertain	5

The Cape parrot is rare and meets the International Union for Conservation of Nature (IUCN) criteria for Endangered C1. While precise details are uncertain, accurate numbers (monitored over more than the last decade) infer a small population size of about 1 000-1 500 individuals, representing considerably less than 500 breeding pairs (Downs, et al. 2014). The small fragmented relic population in the Limpopo province is estimated at c. 100 individuals.

7. National population trend: What is the recent national population trend?	Increasing	1
	Stable	2
	Reduced, but stable	3
	Reduced and still decreasing	4
	Uncertain	5

The Cape Parrot Working Group (CPWG) has data available from surveys and counts over the last 15 years (Downs et al. 2014). These indicate a fairly stable population. However, there is also evidence of local declines, such as in the Karkloof area, KZN which may be a consequence of food shortages in the region (Downs et al. 2014). Historically the trend is downward and, when considering the last three generations (~ 50 years), the trend is negative. Factors leading to decline may include reduced recruitment. It is well known that young birds are more prone to the Psittacine beak and feather disease virus (PBFDV) than adults. The Cape parrot distribution has remained largely unchanged from 1998 – 2012 (Downs et al. 2014). Most Cape parrots (more than a third) were recorded in the Eastern Cape in the Amatola Mountain range from Alice to Stutterheim. The former Transkei and southern KwaZulu-Natal each had less than a third while there was a relic population of about 80-100 Cape parrots in the Magoebaskloof area of Limpopo Province (Downs et al. 2014).

8. Quality of information: What type of information is available to describe abundance and trend in the national population?	Quantitative data, recent	1
	Good local knowledge	2
	Quantitative data, outdated	3
	Anecdotal information	4
	None	5

Very good, recent quantitative data are available from the CPWG. An annual national census has been undertaken for more than 15 years during the months of April and May, in which hundreds of volunteers at sites throughout the range of the species enumerate abundance of Cape parrots for a single day during a 3-5 hour period from sunrise and again during a 3 hour period before sunset (Downs et al. 2014).

9. Major threats: What major threat is the species facing (<u>underline</u> following: <u>overuse/ habitat loss and alteration/</u> other: <u>disease</u>) and how severe is it?	None	1
	Limited/Reversible	2
	Substantial	3
	Severe/Irreversible	4
	Uncertain	5
1. Habitat loss and alteration Habitat is critically important and loss and degradation of habitat is regarded as the ultimate threat to the Cape parrot. Habitat protection has historically been poor and is currently worsening. Only 2% of South Africa is forest and a very small percentage of that is Afromontane Southern Mistbelt forest. At present there is no management or control of forest resources. Within the former Transkei there is significant ring-barking of forest trees, and significant loss of preferred habitat. Selective logging continues and the commercial off-take of yellowwoods is a major problem. Habitat degradation may result in poor nutrition, which increases the parrot's susceptibility to PBFVDV. Habitat loss may remain the primary threat, if and when the disease problem has dissipated. 2. Disease According to Boyes (pers. comm.) many of the birds caught during a drought period in 2010 tested positive for PBFVDV. The disease appears to affect birds in times of extreme drought or food stress (Downs et al. 2015). Despite this, the population has not declined dramatically in the Eastern Cape or KZN where infected birds were recorded. PBFVDV is an infection caused by a circovirus, producing symptoms that can vary considerably. The feathers become malformed, with fractures, and there are lesions to the beak. It is most prevalent in young birds but can also affect adults. It prevents normal feather development; feather sheaths are retained and there is haemorrhaging within the pulp cavity. In young birds it may also cause septicaemia, pneumonia, enteritis, and rapid weight loss, leading to death. In older birds, short clubbed feathers, deformed curled feathers and stress lines appear. Changes to the beak may include progressive elongation, fractures, necrosis, and ulceration. The disease causes mortality, especially when birds are malnourished or when chicks are producing their first feathers. The virus was first described in Australian cockatoos, although nowadays it occurs worldwide in the wild and especially in captivity. There is no treatment for PBFVDV infection, but there are now established protocols for the rehabilitation of infected Cape parrots that had to be removed from the wild as they were unable to fly or lift their own body weight. Quantitative-PCR (Q-PCR) tests revealed that the levels of the virus in the blood stream declined as the parrots recovered condition on a good diet in a warm aviary, but all parrots were still PBFVDV-positive when they were released back into the wild. There is no doubt that PBFVDV outbreaks are linked to seasonal food resource bottlenecks (Downs et al. 2015). 3. Illegal local trade Illegal national trade may well be occurring. There is a high demand for the species from aviculturists owing to the bird's rarity, which has caused an escalation in its market value to around R100 000 per pair of birds. Coupled with this high demand, Cape parrots are easy to capture on private property, smallholdings, and farms. Until very recently, CITES did not recognize the Cape parrot as a species separate from the grey-headed parrot (<i>P. r. suahelicus</i>), and thus the international trade in the Cape parrot could not be effectively regulated and monitored.		
Harvest management		
10. Illegal off-take or trade: How significant is the national problem of illegal or unmanaged off-take or trade?	None	1
	Small	2
	Medium	3
	Large	4
	Uncertain	5
Permits are not issued to harvest Cape parrots from wild populations, however low level illegal off-take has been ongoing since the 1960s. Train drivers from the former Transkei used to sell Cape parrots along their routes (Downs, In litt.). Nest poaching is still a problem with several fledglings sold on the roadside each year. Annually there are unconfirmed reports of Cape parrot fledglings offered for sale. Current investigations are focussed on forest workers and wildlife officers in the Stutterheim area who appear to be selling Cape parrot fledglings from one or two nests in the area. Unfortunately it is not possible to provide figures for illegal off-take or trade in KwaZulu-Natal as these cases are seldom reported to Ezemvelo KwaZulu-Natal Wildlife. The wild population in the Amathole region in the Eastern Cape feeds on wild cherries (<i>Prunus serotina</i>), crab apples (<i>Malus domestica</i>), wild plums (<i>Harpephyllum caffrum</i>) and pecan nuts (<i>Carya illinoensis</i>) for much of the year, thus bringing them into direct contact with private landowners, commercial farmers, and local communities. Several people have been found with nets over or in front of their pecan nut trees that could be used to catch Cape parrots. There is a high demand for the species from aviculturists owing to the bird's rarity, which has caused an escalation in its		

market value to around R100 000 per pair of birds.		
11. Management history: What is the history of harvest?	Managed harvest: on-going with adaptive framework	1
	Managed harvest: on-going but informal	2
	Managed harvest: new	3
	Unmanaged harvest: on-going or new	4
	Uncertain	5
The Cape parrot population is unmanaged and, since it is free-roaming and fragmented, it would be very difficult to manage. Permits are not issued to harvest Cape parrots from wild populations, but low level illegal off-take has been on-going since the 1960s. Nest poaching is known to take place, with several fledglings sold on the roadside each year. Only relatively recently (in 2002 and again in 2005) has the Cape parrot been recognised as a separate species from the brown-necked parrot (<i>P. fuscicollis fuscicollis</i>) and the grey-headed parrot (<i>P. f. suahelicus</i>) (Clancey 1997, Wirminghaus 2002 et al., Perrin 2005). BirdLife International and the IUCN however still do not recognise the grey-headed parrot and Cape parrot as two separate species. This complicates the management of international trade in harvested birds as exports recorded for <i>Poicephalus robustus</i> may be for grey-headed parrots. Grey-headed parrots are bred in South Africa and are exported. No adequate controls are in place at airports or border crossings to ensure that consignments are checked for both species of parrot. Furthermore wild-collected Cape parrots are reportedly declared as captive-bred. Export permits for parrots are not endorsed in every province and neither are shipments of Cape parrots inspected (e.g. in the Western Cape). At Pietermaritzburg (PMB) airport for example, shipments and cargo manifests are simply labelled “birds” and shipments are not checked for permits. A detailed analysis of the taxonomy and phylogeography of <i>Poicephalus robustus</i> and <i>Poicephalus fuscicollis suahelicus</i>, and the fingerprinting of captive <i>Poicephalus robustus</i> individuals using DNA methods have been undertaken as a PhD study at the University of KwaZulu-Natal. Results from multilocus DNA analyses conducted for the 138 samples from five <i>Poicephalus</i> species (<i>P. cryptoxanthus</i>, <i>P. guillemi</i>, <i>P. meyeri</i>, <i>P. robustus</i> and <i>P. rueppellii</i>) indicate clear genetic differentiation between <i>P.r. robustus</i> and the <i>P.r. suahelicus</i> - <i>P.r. fuscicollis</i> cluster supporting previous recommendations that the Cape parrot should be viewed as a separate species, namely <i>P. robustus</i>, and that the grey-headed parrot and brown-necked parrot should be grouped under the <i>P. fuscicollis</i> species complex as <i>P.f. suahelicus</i> and <i>P.f. fuscicollis</i> respectively (Coetzer et al. 2015).		
12. Management plan or equivalent: Is there a management plan related to the harvest of the species?	Approved and co-ordinated local and national management plans	1
	Approved national/state/provincial management plan(s)	2
	Approved local management plan	3
	No approved plan: informal unplanned management	4
	Uncertain	5
Currently, there is no national management plan for the conservation and sustainable use of the Cape parrot or its habitat. There has been no reduction in logging of yellowwoods by legal commercial loggers at priority sites. A provisional Management Plan that forms part of BirdLife South Africa’s National Action Plan (Warburton et al. 2002) for Cape parrot has only been partly implemented. In particular, there has been development of opportunities to enhance the livelihoods of communities living adjacent to Cape parrot populations. The Hans Hoheisen Charitable Trust and Conservation International-funded iziKhwenene Project has already partnered with four villages in the Hogsback and Zingcuka areas, benefitting over 200 local community members by establishing 25 micro-nurseries and paying one person per household casual wages to plant indigenous trees, build and erect nest boxes, and take care of all trees in the fenced off Forest Custodians Program forest plots near these villages. Fruit and nut trees have been planted along the fence line of the indigenous forest plots, as well as near homes that have micro-nurseries to improve the food supply for the Cape parrots. School projects have been established to plant over 2,000 indigenous trees on school and university grounds. Environmental education continues to be fostered in local schools in the Eastern Cape. Through the iziKhwenene Project 20,810 indigenous trees have been planted and 258 nest boxes have been erected along the Amathole mountain range and now have four occupied nest boxes being used for breeding (Boyes 2013). All trees planted are audited every 6 months, while nest box monitoring and maintenance is ongoing. Research projects are still ongoing with a particular focus on movements of Cape parrots, their status as a crop pest and disease prevalence.		
13. Aim of harvest regime in management planning: What is harvest aiming to achieve?	Generate conservation benefit	1
	Population management/control	2
	Maximize economic yield	3
	Opportunistic, unselective harvest, or none	4

	Uncertain	5
There is no legal harvest of Cape parrots, even for the purposes of augmenting captive breeding stock.		
14. Quotas: Is the harvest based on a system of quotas?	On-going national quota: based on biologically derived local quotas	1
	On-going quotas: "cautious" national or local	2
	Untried quota: recent and based on biologically derived local quotas	3
	Market-driven quota(s), arbitrary quota(s), or no quotas	4
	Uncertain	5
There is no legal harvest of Cape parrots and thus no quota.		
Control of harvest		
15. Harvesting in Protected Areas: What percentage of the legal national harvest occurs in State-controlled Protected Areas?	High	1
	Medium	2
	Low	3
	None	4
	Uncertain	5
No legal harvesting occurs.		
16. Harvesting in areas with strong resource tenure or ownership: What percentage of the legal national harvest occurs outside Protected Areas, in areas with strong local control over resource use?	High	1
	Medium	2
	Low	3
	None	4
	Uncertain	5
The species is not legally harvested.		
17. Harvesting in areas with open access: What percentage of the legal national harvest occurs in areas where there is no strong local control, giving <i>de facto</i> or actual open access?	None	1
	Low	2
	Medium	3
	High	4
	Uncertain	5
The species is not legally harvested.		
18. Confidence in harvest management: Do budgetary and other factors allow effective implementation of management plan(s) and harvest controls?	High confidence	1
	Medium confidence	2
	Low confidence	3
	No confidence	4
	Uncertain	5
Overall there is a low confidence in the harvest management of the Cape parrot. Confidence is low in the Eastern Cape because of a lack of capacity in the provincial management authority, and because of fragmented management among key areas where the species occurs. There is furthermore a lack of co-ordination between various role players. Much the same situation exists in Limpopo. Land where Cape parrots occur belongs to private owners so there is a time delay in responding to possible illegal harvesting. Reports are received of illegal capture but arresting a perpetrator in the act of poaching is difficult (Downs, In litt.). There is reportedly a smuggling route to Johannesburg that bypasses the authorities. The main problem is a shortage of law enforcement officials on the ground. In addition, law enforcement officials are limited to their districts and must obtain permission to conduct investigations in neighbouring districts. In KwaZulu-Natal there is no confidence in the harvest management of the Cape parrot due to limited personnel. Furthermore district officers in KwaZulu-Natal are required to undertake a range of activities, including law enforcement, and they are also geographically limited to their districts. The South African Police Service (SAPS), the National Prosecuting Authority (NPA) and Ezemvelo KZN Wildlife collaborate on illegal wildlife trade investigations. The Eastern Cape has a similar grouping of law enforcement organizations.		
Anecdotal information indicates that permits are acquired for grey-headed parrots and the birds are then allegedly		

exchanged for Cape parrots. Some of the reasons why this occurs include i) insufficient inspections of registered Cape parrot breeders in the various provinces to check whether the birds are actually breeding, the chicks surviving and that the birds that are being traded are F2 generation, ii) lack of skills in being able to differentiate between Cape and grey-headed parrots especially the chicks, iii) absence of officials for verifying the identity of the birds when the birds are crated, iv) infrequent checking of consignments at airports, especially when these consignments are scheduled to fly over weekends and after working hours, v) unawareness of consignments, and vi) lack of knowledge on how to check that CITES permits are correctly filled in.

Monitoring of harvest

19. Methods used to monitor the harvest: What is the principal method used to monitor the effects of the harvest?	Direct population estimates	1
	Quantitative indices	2
	Qualitative indices	3
	National monitoring of exports	4
	No monitoring or uncertain	5

Although the CPWG conducts surveys and counts of Cape parrots annually, these counts cannot be used to monitor the effects of illegal harvest. National monitoring of exports has not been possible because the Cape parrot was only very recently included as a separate species in the Appendices to CITES and trade records therefore do not distinguish between grey-headed parrots and Cape parrots. A captive population of about 100 birds is monitored by the Pan African Association of Zoos and Aquaria Stud Book. Legal local trade in captive specimens is monitored by provincial nature conservation authorities.

20. Confidence in harvest monitoring: Do budgetary and other factors allow effective harvest monitoring?	High confidence	1
	Medium confidence	2
	Low confidence	3
	No confidence	4
	Uncertain	5

National monitoring of exports has not been possible because the Cape parrot was only very recently included as a separate species in the Appendices to CITES and trade records therefore do not distinguish between grey-headed parrots and Cape parrots.

Incentives and benefits from harvesting

21. Utilization compared to other threats: What is the effect of the harvest when taken together with the major threat that has been identified for this species?	Beneficial	1
	Neutral	2
	Harmful	3
	Highly negative	4
	Uncertain	5

While the long term threat to the Cape parrot has been habitat loss, affecting diet and nesting sites adversely, the more recent threats are (a) infection with and mortality due to PBFVDV, and (b) local poaching and trade. Loss of adults appears to cause the population to decrease rapidly.

22. Incentives for species conservation: At the national level, how much conservation benefit to this species accrues from harvesting?	High	1
	Medium	2
	Low	3
	None	4
	Uncertain	5

There is currently no legal harvesting and thus no incentives for species conservation gained through harvesting.

23. Incentives for habitat conservation: At the national level, how much habitat conservation benefit is derived from harvesting?	High	1
	Medium	2
	Low	3
	None	4
	Uncertain	5

Afromontane Southern Mistbelt forests comprise a very small percentage of the land area of South Africa, and are threatened by lumber extraction for the furniture industry, and locally for firewood. If Cape parrots were harvested in a controlled and sustainable way according to a harvesting plan, the income generated could theoretically sponsor

conservations efforts. However due to the current conservation status of the Cape parrot, harvesting of wild birds is inadvisable.

Protection from harvest

24. Proportion strictly protected: What percentage of the species' natural range or population is legally excluded from harvest?	>15%	1
	5-15%	2
	<5%	3
	None	4
	Uncertain	5

None of the wild population is strictly protected from harvesting within its habitat due to the fragmentation of the habitat and the local mobility of the species. However the species is listed as threatened in terms of section 56 of the National Environmental Management: Biodiversity Act (NEMBA) of 2004, as specially protected in KwaZulu-Natal and as a protected species in the Eastern Cape. Permits are therefore required for the harvesting of Cape parrots; however permits are currently not issued. There are no protected areas declared specifically for the Cape parrot. Indirectly, protected Afromontane Southern Mistbelt Forests provide protection for the Cape parrot. In KZN, Cape parrots occur in the following protected areas: Impendle Nature Reserve, Marutswa Forest, iGxalingenwa Nature Reserve, Kwa Yili Nature Reserve, Minerva Private Nature Reserve, and Umgano. Umgano is in the process of being declared a nature reserve but the process is not complete.

25. Effectiveness of strict protection measures: Do budgetary and other factors give confidence in the effectiveness of measures taken to afford strict protection?	High confidence	1
	Medium confidence	2
	Low confidence	3
	No confidence	4
	Uncertain	5

None of the wild population is strictly protected from harvesting within its habitat due to the fragmentation of the habitat and the local mobility of the species. However the species is listed as threatened in terms of section 56 of the National Environmental Management: Biodiversity Act (NEMBA) of 2004 and permits are therefore required for the harvesting of Cape parrots; however permits are currently not issued. The Cape parrot is afforded legislative protection but this legislative protection is not a prohibition and therefore is not considered a strict protection measure.

26. Regulation of harvest effort: How effective are any restrictions on harvesting (such as age or size, season or equipment) for preventing overuse?	Very effective	1
	Effective	2
	Ineffective	3
	None	4
	Uncertain	5

No permits are issued for harvesting of wild Cape parrots, but it appears that there is nevertheless an unquantified level of illegal harvesting. There are currently no restrictions on the age of birds allowed for export. As chicks of many parrot species look alike, identifying Cape parrot chicks would be very difficult for law enforcers.

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