



# An Intervention Program Based on Plant Surrogates as Alternatives to the Use of Southern Ground-Hornbills in Cultural Practices

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## Research

### Abstract

The Southern Ground-Hornbill (SGH) (*Bucorvus leadbeateri* Vigors, 1825) is a globally threatened bird. The least studied and addressed threat facing the SGH is its use in traditional African cultural practices. This study aimed to develop and refine an intervention program based on the use of plant surrogates as alternatives to the use of SGHs in such practices. Following a grounded-action research approach, a preliminary week-long program was developed and implemented among a group of 10 traditional healers from South Africa. Feedback from the participants was analyzed qualitatively and used to refine the program. The participants identified several readily available and culturally congruent plant surrogates that could be used as alternatives to the SGH. Whilst the program requires additional refinement and implementation across the bird's range, preliminary results indicate that the use of non-threatened plant species as surrogates for the SGH, as well as for similarly threatened species, holds promise as a rapid, cost-effective, and culturally sensitive conservation intervention.

### Introduction

The Southern Ground-Hornbill (SGH) (*Bucorvus leadbeateri* Vigors, 1825) is a large black bird with bare red facial skin and white primary feathers that are only visible in flight (Kemp & Kemp 1980) (Figure 1). It is found in savannah and open woodland habitats throughout the northern, eastern, and southern parts of South Africa, as well as in Mozambique, Zimbabwe, eastern and southern Botswana, northern Namibia, Angola, the eastern parts of the Democratic Republic of the Congo, Zambia, Malawi, Tanzania, southern Kenya, and eastern Rwanda and Burundi (Kemp 1995). The bird spends most of its time foraging on the ground for small animals (up to the size of hares)

(Kemp & Kemp 1978) in large territories with densities of 1 group per 100–250 km<sup>2</sup> (Kemp & Kemp 1980, Theron 2011). SGHs occur in cooperatively breeding groups of up to a dozen birds (average 3.5) that normally consist of an adult breeding pair and various helpers, the latter being mostly male and immature. Its population dynamics are dominated by factors such as a long mean lifespan (estimated 50–60 years), low reproductive rate (one chick fledged per group every nine years on average), and long age to both sexual maturity (4–6 years) and first breeding (>10 years) (Kemp 1988, Kemp *et al.* 1989). All other aspects related to the bird's ecology and biology have been reviewed by Kemp and Kemp (1980) and Kemp (1995).

BirdLife International (2012) views the bird's conservation status as being globally threatened, a status confirmed by the fact that the bird has disappeared from large parts of its former natural range, probably as a result of such anthropogenic threats as habitat destruction, direct persecution, indirect poisoning, electrocution, trade in live specimens, and use in cultural practices (Kemp 2001). Of all

### Correspondence

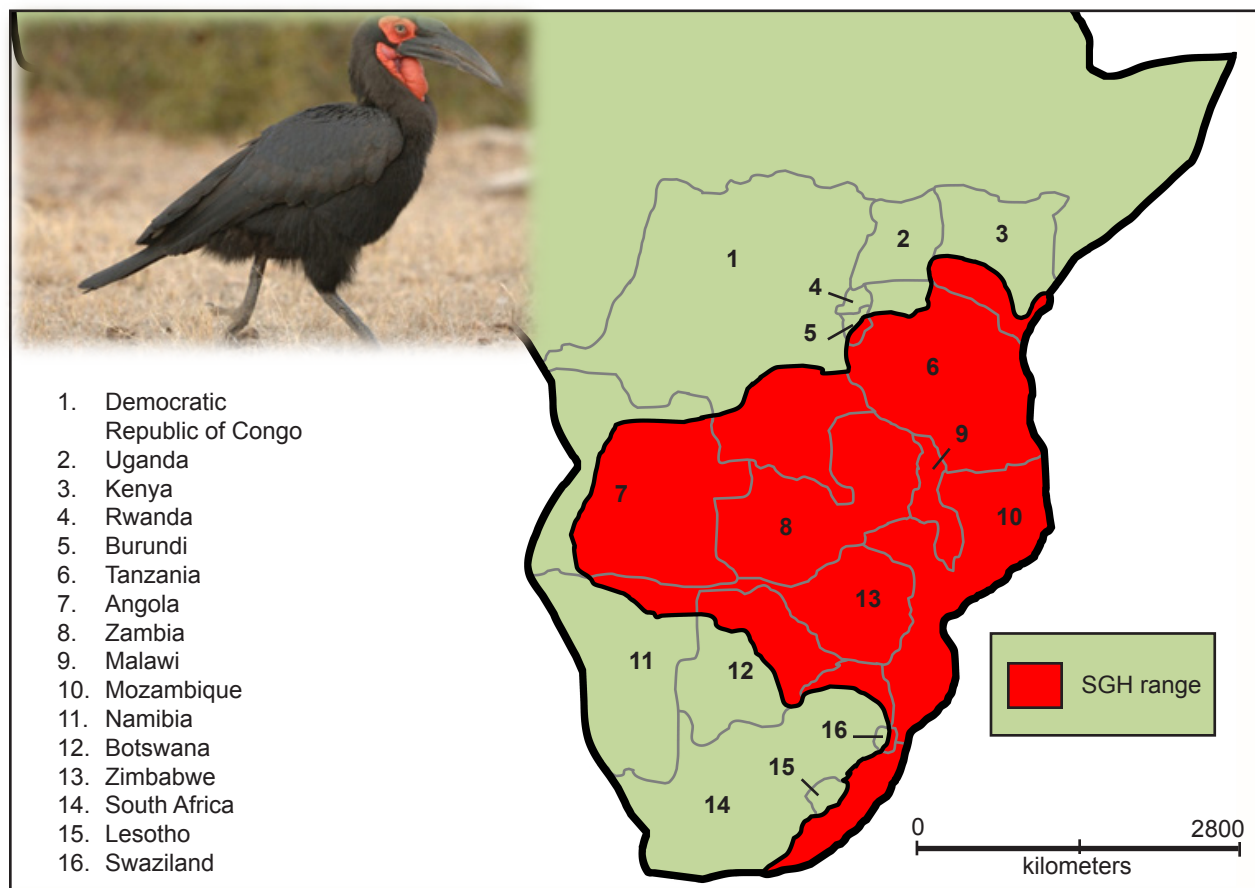
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**Figure 1.** Adult male Southern Ground-Hornbill (SGH) (*Bucorvus leadbeateri* Vigors, 1825) and map indicating its distribution in southern Africa. (Photograph by Lucy Kemp)

these threats, the least studied is the SGH's use in cultural practices.

Most documented knowledge relating to the SGH's use in cultural beliefs and practices stems from the southern parts of its range. Such beliefs typically relate either to (1) the self (Kalimira 2007), (2) important others in the social and spiritual worlds (Chiweshe 2007, D'Ivry-Russel 2000, Maasdorp 2007, Simelane & Knight 1997, Vernon 1984), and (3) the environment, which includes beliefs and practices pertaining to hunting and food (Chiweshe 2007, Maasdorp 2007) and to rain, lightning, and drought (Chiweshe 2007, Cunningham & Zondi 1991, Msimanga 2004, Roderigues 1996, Simelane & Knight 1997, Vernon 1984). Only a small number of studies have recorded beliefs and practices in the northern parts of the SGH's range, most notably in Tanzania (Wilfred 2007) and Kenya (Muiruri & Maundu 2010) where the bird is mostly associated with evil and death.

In order to verify and further explore beliefs and practices related to the SGH, the authors conducted a survey across nine southern and east-African countries that form part of the bird's range. It was found that the SGH is mainly believed to be an omen of loss, deprivation, or destruction, typically by announcing the impending death of someone known to the person encountering the bird or on whose homestead the SGH perches. The SGH is also viewed as a bad omen that signifies the presence of evil spirits. In many areas, strong associations exist between the SGH and rain/drought, with the bird believed to signal either the start of the rainy season or its end, depending on the area in question. However, the SGH was also associated with protective beliefs and practices in that many were of the opinion that the SGH has the capacity to ward off lightning and to offer protection against evil spirits. In countries such as Malawi, the SGH was believed to be able to cause the individual who uses the bird to become invisible to enemies. Finally, in several countries, the belief was held that the SGH enables remote viewing and seeing into the future, as well as lends authority and a strong voice to local chiefs (Coetzee *et al.* 2014).

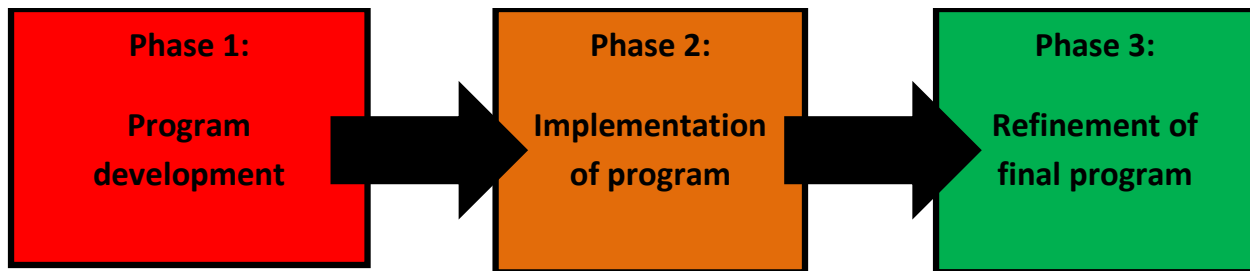


Figure 2. Research design and phases.

Overall, it was found that while some beliefs and practices related to the SGH could potentially be protective and thereby aid its conservation, others have a destructive impact and might, therefore, need to be addressed. Countries where such beliefs occur and where further interventions are required include Kenya, Tanzania, Malawi, Zambia, Zimbabwe, South Africa, and Mozambique (Coetzee *et al.* 2014). One promising strategy for addressing these destructive beliefs and uses in a culturally sensitive manner involves the identification and use of plant surrogates as alternatives to the SGH in cultural rituals and practices. The aim of this research was, therefore, to develop and refine an intervention program based on plant surrogates as alternatives to the use of SGHs in cultural practices.

## Methods

### Approach

A grounded-action research approach (Simmons & Gregory 2003) was followed because of the need to develop an intervention program aimed at promoting behavioral change (e.g., convincing users to utilize alternative species). This approach, which also served as the theoretical framework for the study, is inductively derived from the study of the phenomenon it represents for the purpose of creating and applying practical solutions to a social system (Simmons & Gregory 2003). This included the development of options for change, such as the identification and use of alternative (mostly plant) species not found on any threatened list and which are unlikely to be placed on such a list should these behavioral changes occur. This approach also allows for discussions of practical ways to integrate the knowledge and solutions that have been generated within a continuous strategy of collaborative reflection and negotiation.

### Design process

The specific design process employed consisted of three phases (Figure 2). A preliminary program was developed from existing literature in combination with a dynamics study conducted throughout the development of the pro-

gram during the first phase, followed by the application (pilot testing) of the program in the field. During the final stage, feedback was obtained from the participants, which was then analyzed and used to further refine the program.

### Phase 1: Program development

Consistent with a grounded-action research approach, the program was developed during interactions with the participants while exploring the dynamics of SGH use. This knowledge was integrated with the basic principles of psycho-social group interventions (Corey & Corey 2006) and program development (Rothman & Thomas 1994). The program is comprised of four sessions. Each session has a specific goal and is facilitated by asking the participants a set of questions followed by a discussion of each question by the group. An attempt has also been made to ensure that the program's duration would be sufficient to establish a good relationship between the authors and the participants (a prerequisite for change to occur) but would preclude the need for excessive logistical and financial resources. Various authors indicated that an intensive one-week program can be successful in establishing the necessary change or to learn new knowledge and skills (Newes 2006). Consequently, it was decided that the program should be developed so that it could be facilitated during a number of sessions over a period of one week. Table 1 provides an outline of the preliminary program

### Phase 2: Implementation of the program

The preliminary program outlined in Table 1 was implemented among an initial purposively selected sample (Creswell 2007) of 10 participants, of whom six were males (m) and four were females (f). Eight participants were originally from KwaZulu-Natal (4 m, 1 f) and the Eastern Cape Province (2 m, 1 f) in South Africa, and one each from the neighboring countries of Zimbabwe (m) and Mozambique (m). Their ages varied between 45 and 56 years, with a mean age of 47 years.

**Table 1.** Preliminary program as it relates to Southern Ground-Hornbill (SGH) (*Bucorvus leadbeateri* Vigors, 1825).

Sessions	Goals	Short description of sessions
Session one: Building rapport and identifying/verifying dynamics of SGH use in cultural practices	To build trust and identify/verify: a) factors contributing to SGH use, b) strategies followed in reaction to these factors (actual actions/uses), and c) outcomes/effects of these strategies.	The following questions were asked: 1) Do you know this bird (shown to participant in a photograph)? 2) What is the SGH used for? 3) Why and how do you use the SGH? 4) How does it make you feel when you use the bird? 5) What impact do you think your actions have on the bird?
Session two: Exploring the feasibility of using plant or other surrogates and the identification of surrogates	To explore with users the feasibility of using plant (or other) surrogates as alternatives to SGH use and to identify/verify surrogates.	The following questions were asked: 1) Are there any other animals, birds, or plants that are used for the same purpose as the SGH? 2) Please show us a specimen/sample of the species?
Session three: Obtaining commitment from users to use surrogates and negotiating the termination of the intervention	To get commitment from the users to use surrogate species and to negotiate the termination of the intervention.	The following question was asked: 1) Are you willing to use these surrogates instead of the SGH?
Session four: Reflection and integration of what was learned and final data collection	To reflect on what had been learned, to apply the newly-acquired knowledge to participants' everyday work context, and to finalize collection of data.	The following questions were asked: 1) How did you experience the program? 2) What can be done to improve the program?

The goal of the first session was to build rapport with the participants and to establish the use of various SGH parts, including: (1) factors contributing to SGH use (e.g. overt causes for use), (2) strategies followed in reaction to these factors (actual actions/uses), and (3) outcomes and effects of these strategies. Five questions were asked to guide the discussion (see Table 1). In combination, these questions provided a good overview of the dynamics of the SGH's use in cultural practices. It also created awareness (another prerequisite for change) and ensured that all participants had the same level of knowledge, the intention here being to speed up the process.

The goal of the second session was to explore the feasibility of using plant surrogates as alternatives to SGH, as well as to identify such potential surrogates. Participants were, therefore, asked whether they knew of any existing plant surrogates and whether they would be willing to share this knowledge with the authors by showing them specimens or samples of such species.

The goal of the third session was to obtain the commitment of the participants to use the surrogates that have been identified. They were, therefore, asked if they would be willing to do so and, in the process, were encouraged to notice, accept, and embrace these changes.

The goal of the fourth and final session was to optimize the experiential learning of each group member by motivating them to repeat the information they have shared about the plant surrogates and their uses in traditional practices. This was important since it helped participants to integrate their newly-acquired knowledge with their existing frame of knowledge. Group members also helped one another to integrate their knowledge into their everyday work context in practical ways by discussing the different species that are available and how and where these species might be obtained. Finally, participants were asked to reflect on their personal feelings and subjective experiences in relation to the program and to make recommendations on how the program could be refined in future.

### **Phase 3: Refinement of program**

The feedback obtained from the participants was audio-recorded and then transcribed and analyzed by means of thematic content analysis following the procedure outlined in Creswell (2007). Each transcribed text was first read and studied in detail to gain a broad overview of the data, followed by attempts to identify specific concepts in the transcripts that elucidated the SGH's use in traditional cultural practices. As prescribed by Corbin and Strauss (2008), data was initially subjected to a process of open coding, according to which descriptive codes were assigned to fragments of text. Following this, codes were inductively grouped together into categories and overarching themes based on conceptual similarities, and these were then related to one another by means of axial coding. Consistent with grounded-theory, data pertaining to each category was collected until such data was completely saturated (i.e., when further data collection could no longer uncover any new concepts).

Finally, surrogate plant species identified by the participants were photographed, and samples were bought from traders for later identification and verification purposes. In this regard, the authors can confirm that all plant samples thus collected have been duly identified and verified with the assistance of the North-West University's botany department.

## **Results**

### **Identification/verification of dynamics**

#### **Factors contributing to SGH use**

The most obvious causes of the SGH's use in traditional practices are linked to environmental, religious, and cultural factors. Two environmental phenomena in particular have led to the use of SGHs in traditional practices: drought (and the consequent need for rain to grow crops) and lightning, which sometimes strikes people and their property. However, drought and lightning strikes are not merely regarded as natural phenomena within the context of local cultures. These phenomena are also associated with transgressions or wrongful doings against ancestors, thereby imbuing people's responses to these phenomena with culturally and religiously informed overtones (Mbiti 1991). Furthermore, the occasional need for traditional leaders to enhance their authority within a given community has also been found to play a causative role in SGH use in traditional practices. Finally, uncertainty about the future appears in some instances to be related causatively to SGH use.

### **Strategies followed in reaction to these factors (actual actions/uses)**

#### *Bringing rain*

The SGH is used in times of severe drought to bring rain, as is illustrated in the words of this participant: "If you use that bird to bring rain, you won't even reach home... you will reach home running, because it will be raining so much." This participant explained that, depending on the severity of the drought, either a whole bird or its feather will be tied to a rope or piece of string that is then suspended from a branch overhanging a river or other body of water. The ritual also involves dancing and singing special songs related to the bird. Following the ritual, the bird or its parts are guarded by members of the community so that it can be removed when enough rain has fallen.

#### *Protecting against or causing lightning*

This cultural practice involves using the bird either to protect oneself or one's property (e.g., homestead, crops, and other belongings) against lightning, or to cause other people (a neighbor or enemy) to be struck by lightning. It can, therefore, be used in either a positive or a negative context, depending on the user's needs. The ritual that is typically followed in these cases involves using SGH parts (e.g., feathers) mixed with other traditional medicines and animal fat (or even margarine) so that the poultice sticks to where it has been rubbed in or patted on, with strategic places such as the roof of a homestead counting amongst favored application spots.

#### *Remote viewing and foreseeing the future*

A participant from Zimbabwe first identified this strategy, saying that the SGH can be used to find food or to inform us about our enemies. Participants from Gauteng confirmed that the bird is used for similar purposes in this South African province, with such examples as "The bird is a predictor. It can stand here [at the market where the researchers were doing the interview] and it will know what is happening in Soweto [a nearby township where most market-goers reside]," or "It knows everything... where to find food. It is very strong." They also said that when they want to harness the bird's power, they take the ashes of the bird and put it under their tongue or snort a bit before going to sleep, believing that this will cause them to dream "everything" that they want to know about the future that night.

#### *Protecting against evil spirits by instilling personal strength and courage*

This strategy is based on the belief that seeing the bird can bring good fortune and that it is, therefore, a sign of good luck. This does not refer to physical strength as such, but

rather to a strong personality or character that enables a person to withstand the onslaughts of evil spirits. The traditional cultural practice of using the SGH to instil personal strength and courage requires that the bird's parts be ground up and burnt, and that the resulting ashes then be rubbed into incisions made to a person's joints. Other seemingly related uses include use of the bird's ashes on tiny infants to make them "strong."

#### *Lending authority to local leaders*

This strategy involves local leaders using the bird to give themselves a deep voice which, according to beliefs, shows authority. One of the participants explained it well when he said, "It is used to make the chief strong... to make his voice strong so that he can be heard by the community." It would appear that this belief rests on the observation that the SGH has a deep, booming call that can be heard over great distances. To harness the bird's powers in this way involves a ritual where the head of the bird is placed in the chief's bath water before he bathes.

#### *Outcomes/effects of these strategies*

According to the participants, using the SGH makes people feel empowered (e.g., by lending them authority and/or courage), thereby providing them with a sense of control over natural events which they normally would be powerless against (e.g., droughts and lightning). This helps them to survive and cope within an unpredictable everyday context. In its perceived capacity to predict the future and to facilitate remote viewing, the use of the SGH also seems to lead to a reduced sense of uncertainty about the future.

#### *Feasibility of using plant or other surrogates and the identification of surrogates*

The healers confirmed that a variety of plant species are used for similar purposes as that for which SGH parts are being used. In the process, the participants identified various plant surrogates being used to bring rain, protect against or to make lightning, and to foresee the future. Firstly, alternatives to bring rain are generally referred to as **umsenge** and include mainly two plant species (both known as **umsenge**): *Cussonia paniculata* Eckl. & Zeyh. (common cabbage tree) and *Schefflera umbellifera* (Sond.) Baill. (false cabbage tree). In South Africa, *C. paniculata* is used on the Highveld (inland), while *Cussonia spicata* Thunb. and *S. umbellifera* are used in the coastal areas such as KwaZulu-Natal. The rituals accompanying the use of the two species typically involve the placement of leaves of either species in water by a young virgin who has been smeared with **imbovu** (red-brown clay) while the rest of the community sing and dance. According to the participants, the leaves of these two plants are used because when their leaves blow in the wind, they resemble the movement of water. It is, therefore, strong-

ly believed that **umsenge** and the accompanying rituals have the power to bring rain and also, if required, to put an end to rain.

Secondly, to either make or protect against lightning, the participants indicated that a number of species are used regularly by traditional healers in South Africa, either individually or, in most cases, in combination with one another. These include **umganu** (*Sclerocarya birrea* subsp. *caffra* (Sond.) Kokwaro; marula tree); **ikalamuzi** (*Acorus calamus* L.; sweet-flag); **umhlonishwa** (*Psoralea pinnata* L.; fountain bush); three species commonly referred to as **ubangalala** (*Corchorus asplenifolius* Burch.; wild jute; *Tragia meyeriana* Müll.Arg.; and *Maytenus* sp.); **indawoluthi emhlophe** (*Sparaxis grandiflora* subsp. *grandiflora* (D.Delaroche) Ker Gawl.; Cape buttercup/sparaxis); **uboqo** (*Solanum mauritianum* Scop.; woolly nightshade/bugweed); **umsululu**, meaning "lightning" in isiZulu (*Euphorbia tirucalli* L.; pencil plant/rubber-hedge euphorbia); **umadilika** (*Rhynchosia nervosa* Harv.; rankboontjie); **impondovu** (*Peucedanum thodei* T.H.Arnold); and **usolo** (*Albizia adianthifolia* (Schum.) W.Wight; flat-crown albizia/rough-bark flat-crown). All of these species are either ground up and mixed with animal fat (or even brake-fluid) by traditional healers and smeared on strategic points around the homestead. Some traditional medicines that include some of these species or a combination thereof are also smeared on people for the same reason, in other words as a charm to protect against lightning strikes.

Thirdly, *Acacia xanthophloea* Benth. (fever-tree) is most often used to foresee the future, often in combination with such species as **umbonisela** (*Chamaecrista mimosoides* (L.) Greene) (meaning "show me" in isiZulu), **igibonesele** (*Acalypha glandulifolia* Buchinger & Mesin. ex C.Krauss), or **ungibonele** (*Corchorus confusus* Wild). The participants also confirmed that at least one other bird species and another whole family of birds are used to foresee the future: the pied crow (*Corvus albus* Müller, 1776) and vultures.

Finally, no alternatives, according to the participants, are available to give local leaders authority or to instil personal strength and courage. Therefore, for these strategies, only the SGH appears to be used.

#### *Program refinement and recommendations*

The participants all agreed that the fact that these plant species are available and exist as alternatives makes it possible to use them, thus implying that such uses would be fully in keeping with the dictates of their cultural traditions. After a more detailed discussion of these surrogates and making sure that all the participants were familiar with such surrogates, the participants all agreed to use the surrogates instead of SGHs in future. This strategy is culturally sensitive as it does not require healers to change any existing beliefs but simply to utilize surrogate species that

are fully consistent with their existing cultural beliefs and practices and which are already used by many healers. Given that the surrogate species are often far easier and less costly to obtain than the SGH, and as their use would not impact the income that the healers receive for their services, it is believed that this strategy will at least be partly viable. However, future research would be required to ascertain to what extent healers did, in fact, change their use of species.

Only one important theme emerged in relation to the participants' personal experiences of the program, which was that they found it enjoyable and a positive experience for all. Nevertheless, they did make two recommendations. First, they suggested that the program should be presented on an individual basis as opposed to a group basis. Participants indicated that some, and they expect others, may prefer to interact with the researchers on an individual instead of a group basis because some were not too happy to share their knowledge with other healers. In some cases, participants regarded knowledge relating to the use of the SGH in rituals to bring rain as specialized and as exclusive to certain tribes in KwaZulu-Natal (South Africa) and, more specifically, to their local leaders who, according to them, are the only people privileged enough to use the bird. Secondly, they indicated that they also want to learn more about the SGH. This, according to the participants, means that a bi-directional exchange of knowledge should take place between the facilitators of the program and the participants so that the latter can learn more about the bird.

## Discussion

The aim of this study was to develop and refine an intervention program based on plant surrogates as alternatives to the use of SGHs in cultural practices by means of a collaborative, grounded-action research approach. An intervention such as this is of critical importance given the SGH's threatened conservation status and findings which indicate that this species is utilized in cultural practices across several African countries. The preliminary program, which consisted of four sessions, was implemented over a period of one week with a participant group of 10 traditional healers. In the course of this process, beliefs and practices pertaining to the SGH were explored. Following this exploration, plant species were identified which could serve as alternatives to the use of the SGH for purposes such as bringing rain, protecting against lightning or evil spirits, and lending authority to local leaders. It was found that a number of surrogate plant species exist that are regularly used in cultural practices for the same reasons as are SGH parts. The only exception to this involved rituals for lending authority to local leaders. However, as this use appears to be occasional and restricted to high-ranking leaders only, the need to find surrogates for this use seems to be less pressing.

It is notable that the majority of surrogate species identified by the participants in this study, as well as those listed in Appendix 1, also occurs in Zimbabwe and Mozambique as well as in Kenya and Tanzania. However, in South Africa, some of the species identified are, according to the participants, more difficult to obtain because they are largely restricted to specific parts of South Africa. This includes such species as *T. meyeriana*, *R. nervosa*, and *P. thodei*, while others are more common and widely distributed, such as *E. tirucalli*, *S. birrea* subsp. *caffra*, *A. calamus*, *P. pinnata*, and *C. asplenifolius*. In some instances, the distribution of certain species seems to be highly restricted, for example *S. grandiflora* subsp. *grandiflora* is confined to only eight known localities within the limits of the Tulbagh Valley in the Western Cape (South Africa). Several of the species identified by the participants in South Africa are also threatened and vulnerable; thus great care should be taken not to solve one conservation challenge by creating another. However, several other species mentioned by the participants are common, widespread, and not threatened. The conservation status of potential surrogate plants in Zimbabwe and Mozambique is unknown and will have to be confirmed in future studies with the aid of experts and authorities in the respective regions.

The identification of plant species used to foresee the future, such as *A. xanthophloea*, *C. mimosoides*, *A. glandulifolia*, and *C. confusus* has promising implications for other threatened species such as vultures (Mander *et al.* 2007), also regularly used for the purpose of cultural practices similar to those identified in this study in countries such as South Africa, Zimbabwe, and Mozambique. In addition, the pied crow is a common bird in southern Africa and can potentially become a good surrogate for SGHs and vultures, particularly since it is used for the same purpose.

Exactly how effective the program will be has yet to be determined. Whilst not directly stated by the participants, the researchers are of the opinion that local leaders will also have to be involved since, in most instances, they are the ones allowed to use the bird or the ones who will give instructions for its use. Furthermore, the participants' recommendation in relation to presenting the program on an individual basis might not be feasible as the number of users that must be targeted and the number of resources available for such a task will likely preclude such a strategy.

It is recommended that the program be facilitated in the countries where demand for SGH parts appears to be the highest, such as South Africa, Malawi, Kenya, Zimbabwe, and Mozambique, and that it be evaluated by a pre- and post-intervention design that assesses not only the actual impact of the program but also how best to further develop and refine this type of intervention. However, the availabil-

ity of culturally appropriate surrogate species (often easier and cheaper to obtain than the SGH) and the healers' willingness to use these surrogates make the program and the approach in general a feasible option to follow in the case of the SGH, and possibly also in relation to other similarly threatened species. Judging from the lack of existing intervention programs based on the use of plant surrogates as alternatives to the use of threatened animal species in cultural practices, this program could well be the first of its kind with the potential to approach the use of threatened animal species in cultural practices in a manner that is both pragmatic and culturally sensitive.

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Appendix 1. Additional plant surrogates used as protection against lightning (Hutchings 1996, Pooley 1994).

Scientific name	English name	isiZulu name	Uses
<i>Albuca setosa</i> Jacq.	Small white albuca		Charm against lightning
<i>Aloe aristata</i> Haw.	Guinea fowl aloe	<b>Umathithibala</b>	Charm against lightning
<i>Asclepias cultriformis</i> Harv. ex Schltr.	Satellite dish	<b>Ishongwe elimpofu</b>	Roots burnt to ward off lightning
<i>Aspalathus chortophila</i> Eckl. & Zeyh.	Tea-bush	<b>Imphishimphishi</b>	Charm against lightning
<i>Boscia foetida</i> Schinz	Zulu thunder tree		Charm against lightning
<i>Celtis africana</i> Burm.f.	White stinkwood	<b>Indwandwakazane, Umvumvu</b>	Used with crocodile fat against lightning
<i>Eriosema psoraleoides</i> (Lam.) G. Don	Shrubby yellow eri-sema	<b>Uthongololo</b>	Charm against lightning
<i>Eriospermum mackeenii</i> (Hook.f.) Baker	Yellow fluffy-seed	<b>Insulansula</b>	Charm against lightning
<i>Gardenia ternifolia</i> subsp. <i>jovistonantis</i> (Welw.) Verdc.	Large-leaved Transvaal gardenia		Placed in roof to protect against lightning
<i>Grewia flava</i> DC.	Velvet raisin	<b>Umhlwampunzi, Umhlalampuzi</b>	Placed in roof to protect against lightning
<i>Haworthia limifolia</i> Marloth		<b>Isihlakahle, Umathithibala</b>	Charm against lightning
<i>Hymenocardia acida</i> Tul.	Heart fruit		Placed in roof to protect against lightning
<i>Kniphofia caulescens</i> Baker	Lesotho red hot poker	<b>Umathunga</b>	Charm against lightning
<i>Lippia javanica</i> (Burm.f.) Spreng.	Lemon bush	<b>Umsuzwane, Umswazi</b>	Charm against dogs, crocodiles, lightning
<i>Plumbago auriculata</i> Lam.	Plumbago	<b>Umabophe, Umasheshele</b>	Placed in roof to protect against lightning and evil
<i>Sansevieria hyacinthoides</i> (L.) Druce	Mother-in-law's tongue	<b>Isikholokotho, Isikhwendle, Isitokotoko</b>	Protect against lightning
<i>Siphonochilus aethiopicus</i> (Schweinf.) B.L. Burt	Wild ginger	<b>Indungulo, Isephetho</b>	Charm against lightning and snakes
<i>Strychnos decussata</i> (Pappe) Gilg	Cape-teak bitterberry	<b>Umphathawenkosi, Umphathawenkosi-omhlophe, Umkhombazulu, Umlahlankosi</b>	Used with crocodile fat against lightning
<i>Xerophyta retinervis</i> Baker	Black stick lily, Monkey's tail	<b>Isigumana, Isiphemba</b>	Charm against lightning
<i>Ziziphus mucronata</i> Willd.	Buffalo thorn	<b>Umphafa, Umlahlankosi</b>	Grown near house to ward off lightning and evil spirits