AUTHORS:
Eckhart Buchmann[1]
Junior Gabela[2]
Adrian Koopman[3]
Sakhamuzi Mhlongo[4]
Themba Mthembu[5]
Roger Porter[6]
Nandi Thobela[7]
Noleen S. Turner[8]

AFFILIATIONS:
[1]School of Clinical Medicine, University of the Witwatersrand, Johannesburg, South Africa
[2]Self-employed community bird guide, KwaDukuza, South Africa
[3]School of Arts, College of Humanities, University of Kwazulu-Natal, Pietermaritzburg, South Africa
[4]Self-employed community bird guide, Eshowe, South Africa
[5]Self-employed community bird guide, St Lucia, South Africa
[6]Retired from Ezemvelo KZN Wildlife, Pietermaritzburg, South Africa
[7]BirdLife South Africa, Johannesburg, South Africa
[8]School of Arts, College of Humanities, University of KwaZulu-Natal, Durban, South Africa

CORRESPONDENCE TO:
Eckhart Buchmann

EMAIL:
Eckhart.Buchmann@wits.ac.za

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Nkosinathi Madondo

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The end of the beginning: Establishing isiZulu names for all bird species recorded in South Africa

Terminology development is needed for effective science communication, planning, teaching, and learning in indigenous African languages. This need includes species-specific names in indigenous languages for wild birds, which are key indicators of biodiversity and the state of the environment. We report here the successful allocation of isiZulu names to all South African bird species, focusing on the final phase of naming species that are unknown or rare in KwaZulu-Natal Province (traditional home of the Zulu people) and thus have no indigenous naming history. We applied principles and procedures used previously for naming species known in KwaZulu-Natal: (1) reference to early bird books, dictionaries and other literature; (2) in-person workshops that included isiZulu language academics, professional Zulu bird guides, and birders; and (3) linguistic strategies to apply Zulu folk taxonomy to scientific ordering of species. At a three-day in-person workshop, we named 327 species unknown or vagrant in KwaZulu-Natal. Much time was spent on allocating cluster names to locally unfamiliar bird groupings such as tropicbirds, gadfly petrels, sandgrouse, and wheatears. The most frequent linguistic strategy was coinage by extension, where previously established isiZulu cluster names, for example *ujolwane* for 'sparrow', were extended by species qualifiers, as in *ujolwanomkhulu* (sparrow that is great) for Great Sparrow (*Passer motitensis)*. True coinage was also used, as in *unothingo* ('rainbow') for African Pitta (*Pitta angolensis)*. The resulting catalogue of isiZulu names for all 876 South African species completes the terminology development phase to facilitate engagement of isiZulu in science and conservation involving birds.

Significance:

- In an inclusive, stepwise and evaluative process, isiZulu names have been allocated to all wild bird species occurring in South Africa.
- A template is provided for naming bird species in southern African indigenous languages, using established indigenous names and coined names.
- Matters of biodiversity conservation involving birds can now be better communicated in isiZulu, with benefit to the environment and human communities.

Introduction

The Zulu language (isiZulu) has for long recognised the familiar Cape Sparrow (*Passer melanurus)* as *undlunkulu.*[1] Yet, until recently, three other sparrow species known in the KwaZulu-Natal Province (KZN) did not have unique, or species-specific, names. The House Sparrow (*Passer domesticus)*, Southern Grey-headed Sparrow (*Passer diffusus)* and Yellow-throated Petronia (*Gymnoris superciliaris)* were known generically, or lumped, as *ujolwane,* and even as the English-derived transliterated *isipero*.[2] Maclean, in the introduction to the fifth edition of *Roberts' Birds of Southern Africa* writes[3]:

> *Bird names in the African languages present far more problems than in the European-derived languages. Many of them are generic (i.e. all species of sparrow may have the same name), others are regionally limited in application, one name may be applied to two or more different birds, some well-known birds may have more than one name in a single language, and so on. Most bird species have no African names at all.*

In folk taxonomy, as opposed to scientific Linnaean taxonomy, species as a unit do not necessarily matter and most are not uniquely named. It is sufficient to call a bird simply a 'sparrow' in English folk taxonomy, or *ujolwane* in Zulu folk taxonomy. But in scientific discourse and in pursuits in which particular birds are subjects of interest, species do matter. Changes in the abundance and distribution of birds are important indicators of biodiversity loss[4], the latter highlighted in the United Nations' Sustainable Development Goal 15[5]. With the recent exceptions of Kiswahili in Tanzania[6] and Sesotho in Lesotho[7,8], indigenous sub-Saharan African languages do not have comprehensive terminologies or naming systems to distinguish bird species. It is difficult to report research or issues on biodiversity in languages that lack naming systems translatable from English, which then retains its colonial hegemony in scientific communication. There is a growing call to elevate indigenous African languages, and particularly isiZulu, to become languages of teaching and learning in sciences and humanities at universities.[9,10] This requires "terminology creation and … a broadening of the African voice in disciplines where teaching and learning previously took place only through the medium of English"[11]. African languages can develop and adapt scientific terminologies, with the potential to increase acceptance of science in African communities.[12] This would apply in isiZulu as the mother tongue of many millions of South Africans, not only in KZN, but also in Gauteng Province. An output of terminology creation for non-avian animals is the Zululand Frog Guide[13], in which 58 species of frogs received isiZulu names, many from a base of indigenous folk taxonomy[14]. This extension of decolonised methodologies into language planning shows that it is possible to develop life sciences materials in African

languages. Conservation efforts and community awareness may thus be enhanced, contributing positively to avoiding or minimising threats to biodiversity conservation.[14] A study in high schools in KZN showed that code switching (alternating) between English and isiZulu during biology classes improved attitudes of students to biology, "an important subject towards understanding environmental and conservation issues"[15].

In line with the imperatives described above, we set out to establish isiZulu names for all species of wild birds found in South Africa, as listed in BirdLife South Africa's 2022 Checklist.[16] This was an extension of earlier work by our group that produced a comprehensive set of names for all species found in KZN.[17,18] Here we describe our methodology and outputs, including necessary summaries of the onomastic foundations and our group's earlier work.

Foundations: Bird names based on Zulu oral traditions of bird knowledge

Over centuries, Zulu people and their forebears interacted with wild birds, as food, as pests, but also as objects of beauty, and as sources of feathers and plumes for status and ceremonial regalia. Birds feature as metaphors in praises, proverbs and riddles, in charms and as symbols of portent.[19] The most substantial early published contributions on isiZulu names for species of birds appear in two sources. The first is the English book *Natal Birds*, published by the Woodward brothers in 1899[20], which gives isiZulu names for 107 of 386 species described. The other is *Bryant's Zulu-English Dictionary*[21], which lists 211 bird names, some of which are for species, such as *uthekwane* (Hamerkop *Scopus umbretta*) and others for bird groupings or clusters, like *idada* (duck) and *inkonjane* (swallow). A half-century later, the dictionary of Doke and Vilakazi listed 388 names for birds.[22] Austin Roberts, in a lecture prior to publishing *The Birds of South Africa* in 1940, expressed his concern that indigenous African bird names were being lost. His reason for including bird names of the various southern African communities in the book was to encourage efforts to "record them more completely" by birders and language scholars.[23] However, the *Roberts Birds of Southern Africa* series contributed significantly to isiZulu names only in the fifth edition in 1985, where the author Maclean enlisted the help of African language consultants and included 258 species names in isiZulu.[3] These and other sources are extensively discussed elsewhere.[24,25]

Table 1 lists examples of species with established indigenous isiZulu names. Most can be recognised, some with different spelling, from *Natal Birds* or Bryant's dictionary. Names for clusters of birds that share certain characteristics are well known in English – ducks, eagles, owls, and so on. IsiZulu is no different (Table 2). Clearly, the long relationship of Zulu people with birds gave rise to robust names that identify some birds at what we now know to be species level, but more at cluster level. The result is a database of established names founded on indigenous knowledge, as obtained from early bird books and dictionaries. This database laid the foundations upon which isiZulu names could be established for all bird species in KZN, and then in South Africa.

Local knowledge: isiZulu names for all species in KwaZulu-Natal

In 2011, BirdLife South Africa (BLSA) approached one of the authors (N.S.T.) regarding the need for a comprehensive list of isiZulu names for all species of birds in KZN. The aim was to address Maclean's concern that there were many names for one bird, one name for many birds, and many birds with no name.[3] The process that unfolded is described in detail elsewhere.[17-19] Here we provide a necessary summary of the procedures and principles resulting in isiZulu names for all species found in KZN, in five phases.

Phase 1: Review of literature

Authors A.K. and N.S.T. searched the literature to establish, as extensively as possible, all published isiZulu bird names in bird guides, dictionaries, and other sources. Important sources were *Natal Birds*[20], the fifth edition of *Roberts' Birds of Southern Africa*[3], and the dictionaries of Bryant[21] and Doke and Vilakazi[22].

Table 1: Examples of bird species with established isiZulu names

IsiZulu name	English name	Scientific name
ilanda	Western Cattle Egret	*Bubulcus ibis*
inkwazi	African Fish Eagle	*Haliaeetus vocifer*
uphalane	Egyptian Vulture	*Neophron percnopterus*
intinginono	Secretarybird	*Sagittarius serpentarius*
isiphungumangathi	Long-crested Eagle	*Lophaetus occipitalis*
iseme	Denham's Bustard	*Neotis denhami*
indwe	Blue Crane	*Grus paradisea*
unohemu	Grey Crowned Crane	*Balearica regulorum*
ufukwe	Burchell's Coucal	*Centropus burchellii*
uphezukomkhono	Red-chested Cuckoo	*Cuculus solitarius*
insingizi	Southern Ground-hornbill	*Bucorvus leadbeateri*
inhlekabafazi	Green Wood-hoopoe	*Phoeniculus purpureus*
iqola	Southern Fiscal	*Lanius collaris*
iphothwe	Dark-capped Bulbul	*Pycnonotus tricolor*
isomi	Red-winged Starling	*Onychognathus morio*

Table 2: Examples of groupings (clusters) of birds with established isiZulu names

IsiZulu cluster name	English cluster name
idada	duck
iseme	bustard
inqe	vulture
ukhozi	eagle
isikhova	owl
isigqobhamithi	woodpecker
inkonjane	swallow
umunswi	thrush
incwincwi	sunbird
ujolwane	sparrow

Phase 2: First series of workshops with Zulu bird guides

A three-day workshop was held at Phinda Private Game Reserve in 2013, attended by authors N.S.T., A.K. and 12 professional Zulu bird guides from various parts of KZN. The guides were considered knowledgeable on isiZulu bird names, with most coming from rural backgrounds, raised in herding and hunting traditions with time spent in the presence of elders. N.S.T. and A.K. were at the time active professors and lecturers in linguistics and onomastics in the Zulu Department at the University of KwaZulu-Natal, with N.S.T. also an enthusiastic birder. The workshop involved sequential presentation of clusters of species using projected images and videos, and playback of recorded vocalisations. The birds' habits, diet and other salient features were discussed. Author A.K. assisted with information on published isiZulu bird names. For some species, well-known isiZulu names already existed, and were confirmed. Where none existed, names had to be coined. By the end of the workshop, almost one-third of KZN's bird species had received

provisional isiZulu names. Two further workshops were held in 2014 and 2015 with a reduced but engaged core of five Zulu bird guides. All 549 species occurring in KZN received names. The 549 species received a total of 610 isiZulu names, of which 164 (27%) had previously appeared in bird books, and 373 (61%) were coined. The linguistic strategies are outlined in Table 3. Most coinages were by extension ($n = 210$) or adaptation ($n = 142$). Sixty coined names originated from dictionary entries or the workshop participants' personal knowledge.[18] Each hour of work produced an average of eight to nine isiZulu bird names; of critical importance was the use of linguistic strategies, depending on whether established isiZulu names existed for the species under discussion. Where an established name existed, this was confirmed, extended, or adapted. With no established species or cluster name, coinage was required.[17] The morphology of names with associated grammatical devices follows 'linguistic underpinning' detailed elsewhere.[26]

Phase 3: Interrogation of information obtained after the workshops

A further mini-workshop was held, with two Zulu bird guides attending, to discuss problems that arose during analysis of notes taken during the first series of workshops. A refined proceedings document was then passed to author R.P. (retired wildlife ecologist and birder), who identified omissions, errors, inconsistencies, and unsuitable names, which would all need correction and further discussion.

Phase 4: Second series of workshops for correction and finalisation

The corrections identified in Phase 3 were raised and resolved at three workshops, two in 2017 and one in 2018. Discussions were at times lengthy, with challenging examples being appropriate cluster names for different hawks and falcons, and a rearrangement of kingfisher names, as described in detail elsewhere.[19] By the end of these workshops, a total of 18 professional Zulu bird guides had contributed since 2013 to naming birds known from KZN.

Phase 5: Compilation and publication

Combining all information from the two sets of workshops, a master database of isiZulu bird names for KZN was compiled with linguistic notes, semantic backgrounds, and historical and cultural references. The project output appears in two peer-reviewed articles[17,26], a scholarly book *Amagama Ezinyoni: Zulu Names of Birds*[18], and an illustrated field guide *Roberts Birds of KwaZulu-Natal and their Zulu Names*[1].

The end of the beginning: isiZulu names for all South African birds

In 2021, a group of language academics and BLSA ornithologists set up a collaboration for assigning names to bird species in seven indigenous official languages. This became known first as INSAB (Indigenous Names for South African Birds), now SANSAB (South African Names for South African Birds). The group recognised the advanced state of progress on isiZulu names in KZN and suggested that isiZulu names could relatively easily be allocated to all South African bird species. Consequently, BLSA secured funding, and three professional Zulu bird guides who had been strong members of the 2013–2018 isiZulu bird name workshops (authors J.G., S.M. and T.M.) agreed to assist.

We scheduled a three-day workshop for August 2022 in Umhlanga near Durban, with the aim of allocating isiZulu names to all 327 species of South African birds unknown or vagrant in KZN, and thus not discussed in the 2013–2018 workshops. In addition to the three bird guides, our group included A.K., N.S.T., R.P., also N.Th. (BLSA's Empowering People Programme Manager, ensuring community focus) and E.B. (medical scientist and birder with knowledge of isiZulu).

Preparatory meetings to propose isiZulu bird names for approval

A spreadsheet of 327 South African bird species requiring isiZulu names was prepared and arranged in clusters along with the birds from KZN already named. At two preparatory meetings in Pietermaritzburg, A.K., R.P. and E.B. identified species for which isiZulu names could be provisionally coined, for approval by the bird guides at the workshop. The aim was strategic to ensure completion of the task at the workshop within the available time and funding. Of the 327 species listed, 165 were considered suitable for provisional naming. An example is the Great Sparrow, proposed as *ujolwanomkhulu* ('sparrow that is great'). A creative proposal was *usoqhawe* ('the brave warrior') for the

Table 3: Linguistic strategies to allocate isiZulu names to bird species

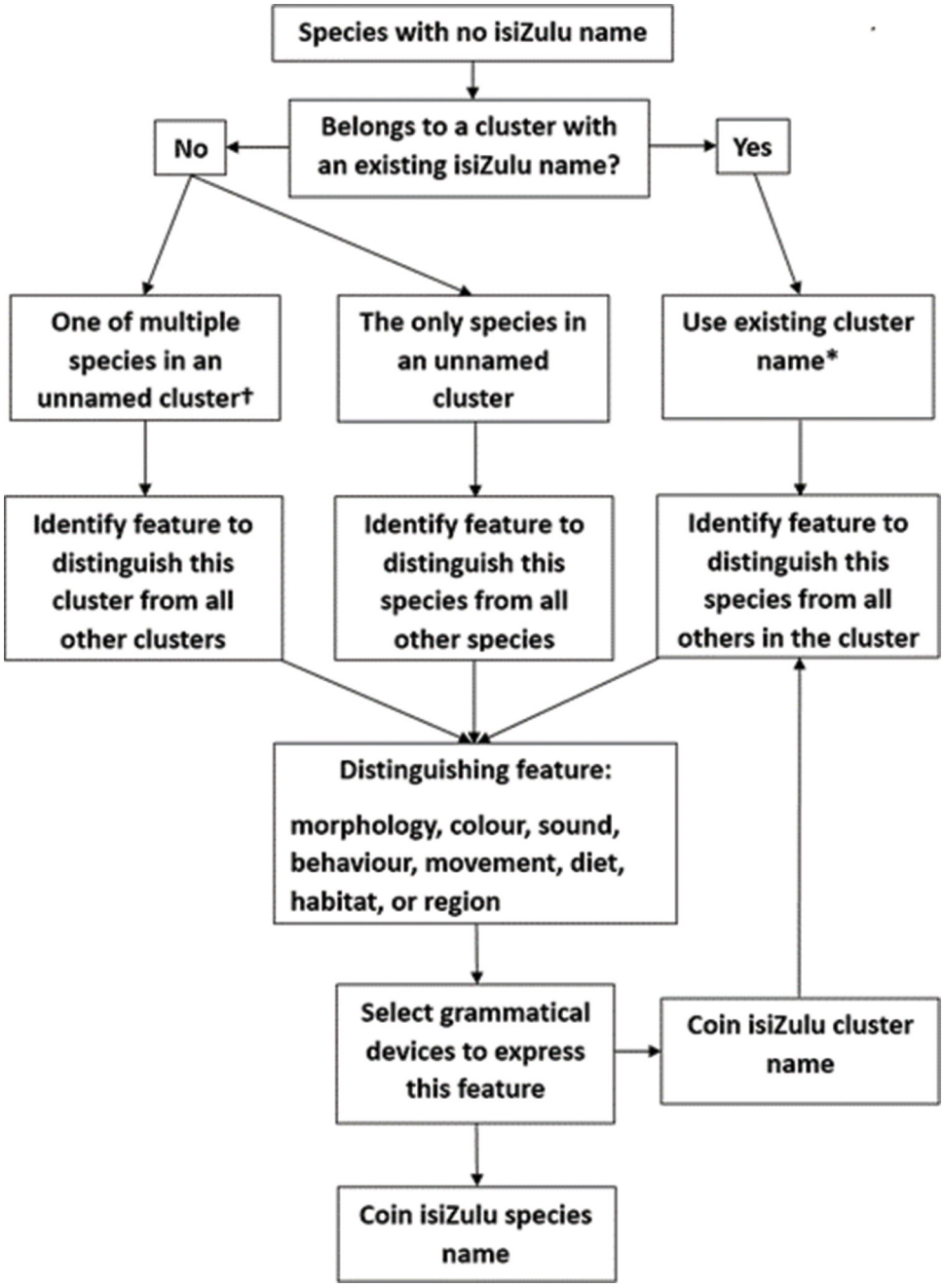
IsiZulu bird name status	Linguistic strategy	Example
Established isiZulu bird name or names exist for a species or species cluster	*Confirmation*: accept as from source.	Accept *intinginono* for Secretarybird *Sagittarius serpentarius*.
	Selection and relegation: if two or more names are available, accept one or two, relegate others.	Accept *ingqungqulu*, relegate *indlamadoda*, for Bateleur *Terathopius ecaudatus*.
	Redirection: Use relegated name from one species and allocate to a similar or related species that has no species-specific name.	Redirect lesser known and relegated name *unowanga* for White Stork *Ciconia ciconia* to become name for Black Stork *Ciconia nigra*.
	Assignment: Use dictionary name for a suitable unidentified bird and allocate to a species that has no species-specific name.	Assign *unoxhongo* ('species of heron'[22]) to Purple Heron *Ardea purpurea*.
No known established isiZulu name for a cluster, species, or species in a related cluster: requires coinage	*Coinage by adaptation*: Slightly alter an existing bird name (cluster or species), or other isiZulu word often using *-no-*, *-ma-*, *-so-* or *-sa-*.	Adapt cluster name for 'thrush' *umunswi* to *umunswili* for Olive Thrush *Turdus olivaceus* and to *inswinswi* for Orange Ground Thrush *Geokichla gurneyi*.
	Coinage by extension: Extend known name for a species cluster with a descriptive qualifier.	Extend cluster name for 'sparrow' *ujolwane* to *ujolwane wekhaya* ('sparrow of home') for House Sparrow *Passer domesticus*.
	True coinage: make up a completely new name where no cluster or species-specific name exists.	Coin *insukakude* ('come from far away') for long-distance migrant Arctic Tern *Sterna paradisaea*.
	Coinage by transliteration: Adopt a name from, for example, English, taking on phonological characteristics in isiZulu, as in *ushizi* for 'cheese'.	This strategy was deliberately avoided in the workshops. No species or cluster names were coined using transliteration.[a]

[a]*Established transliterated isiZulu words were considered acceptable, for example, the name* inkonjane yaseYurobhu *('swallow from Europe') was coined for Barn Swallow,* Hirundo rustica.

White-browed Sparrow-weaver (*Plocepasser mahali)*. The specific epithet *mahali*, a misspelling of the Setswana *mohali* ('great warrior'), appears in Dr Andrew Smith's original scientific species description from 1836. Eight hours of discussion at the preparatory meetings resulted in 147 proposals for isiZulu bird names, with no consensus on names for 18 species. The remaining 162 species (making up the total of 327) included clusters of birds that had no isiZulu names, for example skimmers and sandgrouse, and pelagic birds such as phalaropes, tropicbirds, jaegers, mollymawks, boobies and frigatebirds. Also not suitable for name proposals were albatrosses, petrels, storm petrels, shearwaters and prions (together 51 species), to which only cluster names had been given at the 2013–2018 workshops. Another difficult group was wading birds, with 22 species including plovers, sandpipers, godwits and stints having no obviously applicable cluster names.

Workshop to allocate isiZulu names to birds not known in KwaZulu-Natal

Using the same methodology and linguistic strategy as the 2013–2018 workshops (Table 3), and working for 18 hours over three days, we allocated isiZulu names to all 327 species. Of the 147 names proposed at the preparatory meeting, 83 (56%) were accepted exactly as proposed. Twenty-six (18%) were accepted after minor changes, for example *iseme laseKapa* ('bustard of the Cape') instead of *iseme saseKapa*, for



***Example: Ludwig's Bustard (Neotis ludwigii)**. *Yes, belongs to bustard cluster with existing isiZulu name* iseme → *feature is arid habitat → use possessive locative → coin name* iseme lasehlane *('bustard of the desert').*

†Example: Red Phalarope (Phalaropus fulicarius). *No existing isiZulu cluster name for phalarope → one of multiple species in unnamed cluster → feature is feeding by turning in one spot to agitate water → reduplicate verb* jika *('turn around') with prefix -no- to affirm as coined cluster name* unojikajika → *identify species distinguishing feature: red colour → qualify cluster name with adjective* -bomvu *('red') to coin species name* unojikajikobomvu.

Figure 1: Flow chart explaining isiZulu name coining.

the Southern Black Korhaan (*Afrotis afra)*. Thirty-eight proposed names (26%) were rejected, with more suitable replacements suggested by the Zulu bird guides. The two examples mentioned earlier (Great Sparrow and White-browed Sparrow-weaver) were accepted exactly as proposed.

The coining process is outlined in Figure 1, with two examples. Typically, for each cluster and species to be named, we identified a salient distinguishing feature and selected an appropriate grammatical device to express this feature: (1) bird morphology and colour, with noun + adjective compound, e.g. *amehlabomvu* ('eyes that are red'), as in *iphothwelimehlabomvu* ('bulbul with eyes that are red') for African Red-eyed Bulbul (*Pycnonotus nigricans)*; (2) voice: through onomatopoeia, metaphor or descriptive verb as in the cluster name for chanting goshawks *uheshoculayo* ('goshawk that sings'); (3) movement or behaviour, by a suitable verb, as in *inkwelamthini* ('climb in a tree') for African Spotted Creeper (*Salpornis salvadori)*; and (4) habitat or region, with possessive locative, for example *wasehlane* ('of the desert') as in *uheshoculayo wasehlane* ('chanting goshawk of the desert') for Pale Chanting Goshawk (*Melierax canorus*). The coining process was especially important in this workshop.

We coined cluster names for 17 bird clusters (Table 4). Thirteen were true coinages, with two adapted and two assigned. *Unozulananyana* ('small albatross') was adapted from *unozulane* ('albatross') for the mollymawk cluster, and *unontilo* ('lark') was adapted for three species of lark. We assigned '*ikhwebula'* ('species of bird'[22]) to the frigatebirds thanks to local knowledge of two of the Zulu bird guides. *Ungqwashi* ('Rufous-naped lark'[22]) was assigned to a cluster of five lark species. Creative coinages included *isela* ('thief') for the kleptoparasitic jaegers, and *inqeyolwandle* ('vulture of the ocean') for the scavenging giant petrels.

The 327 species names included 299 coinages by extension (91%), as in the example of the Great Sparrow. One species name was the result of redirection. This was *isikhobotho saseSahel* ('Jackal Buzzard of the Sahel') for the Red-necked Buzzard (*Buteo auguralis). Isikhobotho* is used in some parts of KZN for the Jackal Buzzard (*Buteo rufofuscus)*, but at the 2013–2018 workshops the name was relegated in favour of the better known *inhlandlokazi*. One species name was by assignment. The name *uhhuye* ('South African Lark'[22]) was given to the Fawn-coloured Lark (*Calendulauda africanoides)*. Twenty-three species names (7%) were true coinages (Table 5). Seven of these names also became cluster names for related species, for example *umqolomhlophe* ('white rump') for the Capped Wheatear (*Oenanthe pileata), with* Northern Wheatear (*Oenanthe oenanthe)* becoming *umqolomhlophe waseYurobhu* ('white rump from Europe'). 'White rump' for wheatears is historically appropriate as the English cluster name derives from the Anglo-Saxon *hvit earse* ('white arse'). We frequently used directional or geographic qualifiers, with the four cardinal directions featuring in 40 names (12%), as in Northern Rockhopper Penguin (*Eudyptes moseleyi*) becoming *inguzeqamatshe yaseNyakatho* ('penguin hopping on rocks, of the north'). Place, island or continental qualifiers were used in 52 names (16%), such as *inkotha yaseMadagascar* ('bee-eater from Madagascar') for Olive Bee-eater (*Merops superciliosus)*. More creative coinages included *unothingo* ('the rainbow') for the colourful African Pitta (*Pitta angolensis)*, and *isanyendle* ('like a cricket') for Barred Wren-Warbler (*Calamonastes fasciolatus)*, which has a cricket-like call. The difficulty with cluster names for waders was solved in part by assigning *unothwayiza* ('of walking with long swinging steps'), the name of the Marsh Sandpiper (*Tringa stagnatilis)*, to nine other sandpipers and stints. An example is *unothwayiza waseMelika* ('-of America') for Baird's Sandpiper (*Calidris bairdii)*.

Our raw output from the workshop was a spreadsheet of 876 South African bird species, including 8 found on the Prince Edward Islands, but not on the South African mainland. None of the isiZulu names allocated in the 2013–2018 workshops were altered. The list was forwarded to BLSA with an accompanying report and placed on their website for the duration of 2023, for open peer review and public comment. During the year, our group made corrections and added names for several species newly

Table 4: New isiZulu names for clusters (groupings of related species) not well known in KwaZulu-Natal

IsiZulu cluster name	Reference[a] or translation	English cluster name(s)	Number of species
unozulanyana	to 'small albatross'	mollymawk	10
inqeyolwandle	'vulture of the ocean'	giant petrel	2
unontweza	to 'gliding' or 'sailing'	gadfly petrel	6
isasicibamanzi	'like a gannet'	booby	3
unosisila	to 'bird's tail'	tropicbird	3
ivuka	'rising up, bobbing up'	grebe	2
ikhwebula	unknown[b]	frigatebird	2
unomvula	to 'rain'	Caspian and golden plover	3
unokhukhula	to 'sweeping up'	skimmer	2
unonsundu	to 'brown'	noddy	2
isela	'thief'	jaeger	3
unogwadule	to 'desert'	sandgrouse	4
unongilenyama	to 'black throat'	tit	2
ungqwashi	'lark'	lark	5
unontilo	to 'lark'	lark	3
uqolomhlophe	'white rump'	wheatear	3
usoqhawe	to 'brave warrior'	buffalo weaver and sparrow-weaver	2

[a]*The name-forming prefixes -no- and -so- allow reference to salient characteristics to make up a name.*

[b]ikhwebula *coined for frigatebirds was based on local knowledge of Zulu bird guides at the workshop; in dictionary, listed only as 'species of bird'.*[22]

Table 5: True coinages of isiZulu species names for birds not known from KwaZulu-Natal

Coined species name	Reference or translation[a]	English name	Scientific name
igobakazi	'great bend in neck'	Mute Swan	*Cygnus olor*
unomaqhwa	to 'snow'	Snowy Sheathbill	*Chionis albus*
umhloshana	'whitish one'	Lesser Sheathbill	*Chionis minor*
unomvula[b]	to 'rain'	Caspian Plover	*Charadrius asiaticus*
unokhukhula[b]	to 'sweeping up'	African Skimmer	*Rynchops flavirostris*
unonsundu[b]	to 'brown'	Brown Noddy	*Anous stolidus*
unogwadule[b]	to 'desert'	Namaqua Sandgrouse	*Pterocles namaqua*
unothingo	to 'rainbow'	African Pitta	*Pitta angolensis*
unosichongo	to 'chest-band'	Black-and-white Flycatcher	*Bias musicus*
unomqhelomhlophe	to 'white crown'	Southern White-crowned Shrike	*Eurocephalus anguitimens*
unonhlozi	to 'eyebrows'	Rudd's Lark	*Heteromirafra ruddi*
unocingetsheni	to 'search on stone'	Sclater's Lark	*Spizocorys sclateri*
inkwelamthini	'climb in a tree'	African Spotted Creeper	*Salpornis salvadori*
isanyendle	'like a cricket'	Barred Wren-Warbler	*Calamonastes fasciolatus*
umqalamhlophe[b]	'white throat'	Common Whitethroat	*Curruca communis*
unongomabusuku	to 'song at night'	Thrush Nightingale	*Luscinia luscinia*
uqolomhlophe	'white rump'	Capped Wheatear	*Oenanthe pileata*
inhlaletshenekhandalimhlophe	'lives on rock, with a white head'	Short-toed Rock Thrush	*Monticola brevipes*
unosidlekekazi	to 'huge nest'	Sociable Weaver	*Philetairus socius*
usontshetshana	to 'little beard'	Scaly-feathered Finch	*Sporopipes squamifrons*
unongilonegazi	to 'throat with blood'	Cut-throat Finch	*Amadina fasciata*

[a]*The name-forming prefixes -no- and -so- allow reference to salient characteristics to make up a name.*

[b]*These species names appear also as cluster names in Table 3. As these species were considered the most distinctive, or the 'default' in their cluster, their names also became cluster names, with other species in the cluster taking on extensions. For example, with* unonsundu *the cluster name as well as the species-specific name of the Brown Noddy, the Lesser Noddy (*Anous tenuirostris*) took on the extended* unonsundwana *('small noddy') as its species-specific name.*

recorded in South Africa. An example is *unohhala waseChile* ('storm petrel from Chile') for Pincoya Storm Petrel (*Oceanites pincoyae*), a rare vagrant normally found off the coast of Chile. The isiZulu names are now fully recognised by the BLSA List Committee and are available on the BLSA website.[27]

Discussion

Every species of wild bird in South Africa now has a name in isiZulu. But in the larger process of decolonising scientific study and appreciation of birds, the production of this catalogue is just the beginning. Numerous opportunities beckon. The names are now available for discourse in life sciences at schools and universities where isiZulu is or will be a medium of instruction, even if just through code switching. Local and national isiZulu mass media, when engaging on topics relating to wildlife, will be able to use isiZulu bird names and thus refer to specific species. An example would be discussion on conservation in the Wakkerstroom area of southern Mpumalanga where the critically endangered Rudd's Lark (*Heteromirafra ruddi)* has one of its last refuges. We expect that the local communities who speak isiZulu will find it easier to become enthusiastic about and own a species called *unonhlozi* than one with the distant and colonial-inspired 'Rudd's Lark'. Alternatively, the bird's name would have to be 'Zulu-ised' (perhaps to *i-Rudd's Lark* or *ucilo kaRudd* ('Rudd's Lark')) or otherwise adjusted, or even unwittingly misrepresented. We may justifiably speculate that isiZulu-speaking people visiting conservation areas would notice birds more if they had isiZulu names. The potential benefits for life sciences study, hobbies and biodiversity conservation are obvious, as observed in similar work in Tanzania.[6]

We have focused in this article on the naming of birds unknown in KZN – the final step in a protracted endeavour (Figure 2). The success of this final exercise, completed in less than a year, was entirely dependent on the process that started in 2013 at the first workshop in Phinda Private Game Reserve in KZN. The five phases of the 2013–2018 workshops project ensured stepwise and evaluative accumulation of information and data. The generation of isiZulu bird names depended on historical literature, scientific taxonomy, input of isiZulu language scholars, and specific linguistic strategies. But perhaps of greatest importance was the knowledge, insight and imagination of the Zulu bird guides, upon whose final approval each bird name rested. We can think of no better conduits for traditional and current oral knowledge of birds, and we consider this aspect of our work to be unique. While none of the birds unknown in KZN had a historical isiZulu name (with the possible exception of *ikhwebula*, the frigatebirds), we still ensured consistency with the linguistic strategy and traditional oral knowledge applied in the 2013–2018 workshops.

We recognise that isiZulu is just one of the Nguni language group, a chain of dialects stretching from the Eastern Cape Province (isiXhosa) to Malawi and Tanzania. In search of Nguni commonalities in bird names, we considered the role of other languages, especially isiXhosa, drawing mainly on the exhaustive work of Godfrey[28]. Commonalities were few,

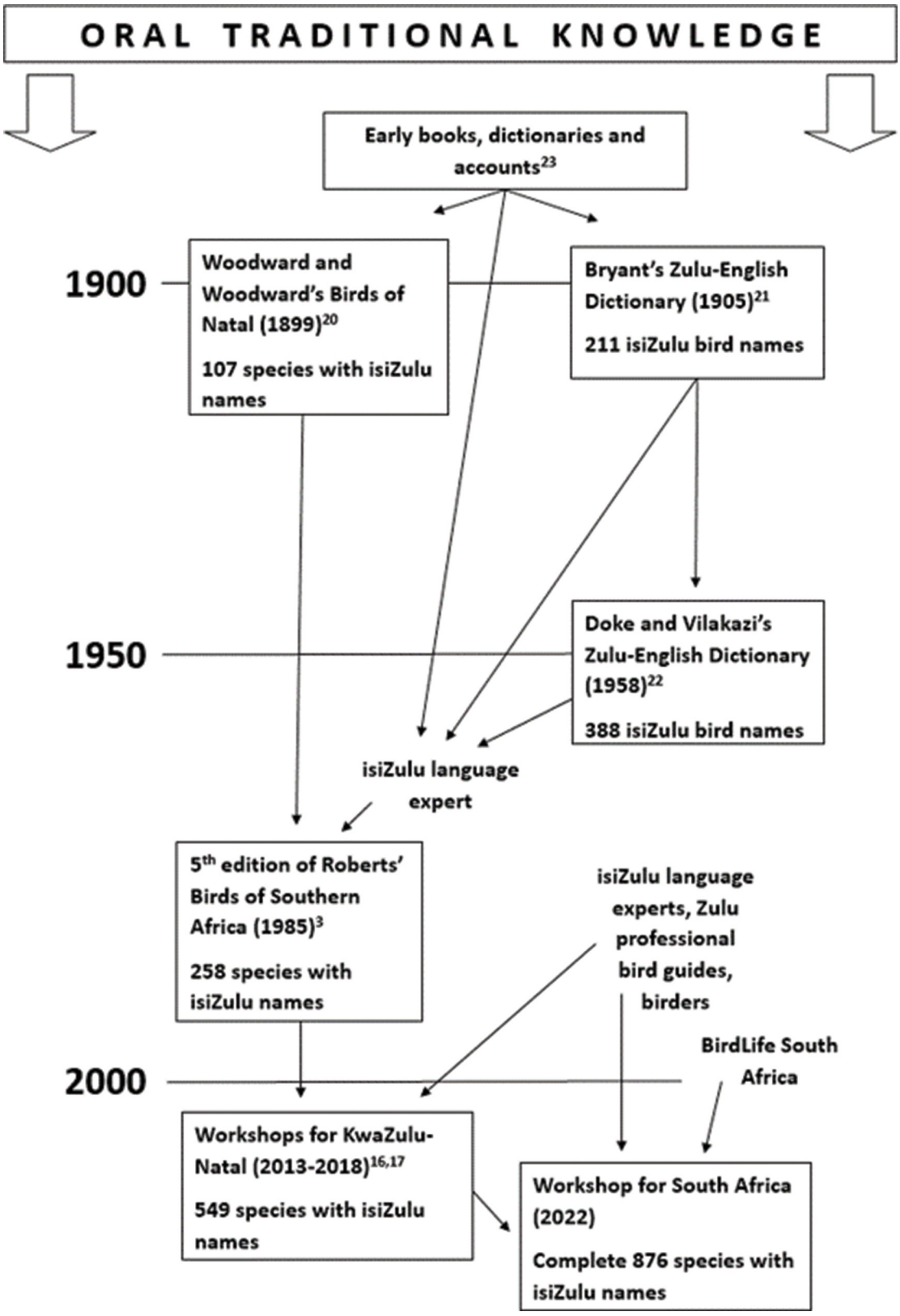


Figure 2: Progress towards isiZulu names for all wild bird species in South Africa, from the 19th century to the 2022 workshop.

with a paucity of species-specific bird names. Our list of names, derived through diverse sources and methods, stands on its own as one in isiZulu, and we make no claim for the names here to be used in any of the other Nguni languages.

It is likely that not everyone will agree with our choices of names. We have mentioned the relegation of the traditional *isikhobotho* (Jackal Buzzard), which we redirected to the vagrant Red-necked Buzzard, a bird that hardly anyone will ever identify in South Africa. Some may criticise our selection of experts in the workshops, especially the lack of formal representation from traditional Zulu communities. The ideal composition of this team cannot be known. However, a feature of this process is its transparency and the clear identification of sources of information. This cannot be said

of the opaque English vernacular naming processes of, for example, Roberts (1940) in *The Birds of South Africa*.[29] And the second edition, in 1957[30], retained only 71% of the English names Roberts had allocated just 17 years earlier[31]. Some or many of the names we have proposed will change. We remain active in our collaboration with the List Committee of BLSA in keeping the names updated, appropriate, and scientifically valid.

Conclusion

We suggest that the process of naming bird species in isiZulu as described here offers a template for similar efforts in other languages in southern Africa. Names of birds in other African languages urgently need to be recorded before the heritage of traditional names is lost. Having bird names in all South Africa's official languages is a fundamental keystone to achieving effective environmental education and awareness. Key to success are language experts with an interest in birds to guide the process, professional bird guides with a deep knowledge of their indigenous language, and experienced ornithologists or birders. Our approach would be restricted to areas where avitourism has resulted in training and employment of indigenous African bird guides. For isiZulu, with a complete set of bird names now available as an essential resource, the first step is now complete. This is the end of the beginning. The next step is the absorption of these names into biodiversity conservation practice, into life science teaching and learning, and into community vocabularies. The rewards will be greater appreciation of ornithology as a science, and priority for conservation of birds and their habitats in isiZulu-speaking parts of South Africa.

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Competing interests

We have no competing interests to declare.

Authors' contributions

N.S.T. and A.K. conceived and led the project. All authors contributed to project conceptualisation and to execution of the methodology. Specific roles have been mentioned in the article. E.B. wrote the manuscript and all authors commented towards acceptance and adoption of a final version.

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