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SOLEGA ETHNO-ORNITHOLOGY

Samira Agnihotri and Aung Si

Birds figure prominently in the traditional knowledge systems of many cultures by virtue of the diverse ways in which humans perceive these creatures, as religious totems, crop pests, food items, sentinels, guides and heralds, to name a few. This preliminary documentation of the traditional ornithological knowledge of the Solega people of southern India discusses the difficulties involved in obtaining a standard set of names that has the consensus of people living in widely dispersed settlements. Solega ways of using bird names in spontaneous speech have implications for theories of ethnobiological nomenclature. A comparison of bird species that are named in Solega, with those that are excluded from their lexicon, challenges some universalist claims concerning ethnotaxonomy. Finally, the ways birds are represented in Solega folklore and traditional ecological knowledge suggest that utilitarian and other cultural concerns, in particular the perceived real or potential interactions between birds and humans, have a significant bearing on Solega bird classification.

Key words: *Solega, ethno-ornithology, birds, Karnataka, Biligiri Rangaswamy Hills*

Tamil - சுருக்கம் : இந்த ஆராய்ச்சியின் முலம் தென்னிந்தியாவில் உள்ள சிறிய தானிய வகைகள் மற்றும் அவற்றின் பாரம்பரிய, அறிவியல் செய்திகள் கண்டறிய பெற்றுள்ளன. இயற்கையில் சிறிய தானிய வகைகளில் உள்ள வேறுபாடுகளை நுண்ணிய முறையில் ஆராய்வதன் மூலம் சிறிய தானிய வகைகளைப் பாரம்பரிய மற்றும் அறிவியல் முறையில் வகைப்படுத்துவதற்கு மிகவும் உதவியாக இருக்கிறது. இந்த ஆராய்ச்சி மூலம் கொல்லி மலையில் வாழ்கின்ற மலைவாழ் மக்கள் உதவியுடன் 174 சிறிய தானிய மாதிரி வகைகள் இயற்கையில் கண்டறியப்பட்டுள்ளன. இந்த சிறிய தானிய விதைகளை பசுமைக் கூடத்தில் வளர்த்து அதன் மூலம் 96 புறஅமைப்புக் கூறுகளையும் மற்றும் அதன் மரபணுக்களையும் பிரித்து "பார்க்கோடு" முறையில் ஆராயப்பெற்றன. இந்தச் சிறிய தானிய வகைகளைப் புறஅமைப்பு எண்ணிக்கை மதிப்பீடு முறையில் பன்முகமாற்று வகைப்படுத்துதலுக்கு உட்படுத்துவதன் மூலம் கிடைக்கப் பெற்ற ஆராய்ச்சி முடிவுகள், மலைவாழ் மலையாளிகளின் சிறிய தானிய வகைப்பாடு மற்றும் அவற்றின் மிக நுண்ணிய வேறுபாடுகளை அறிவியல் கண்ணோட்டத்துடன் படிப்படியாக இனம் கண்டறிந்துள்ளதை விளக்குகிறது. கொல்லி மலை நிலங்களில் மலைவாழ் மலையாளி மக்கள் 19 அரிய சிறிய தானிய வகைகளை பாரம்பரிய முறையில் வகைப்படுத்தியுள்ளனர். இந்த வகைகளில் உள்ள புறஅமைப்பு மற்றும் மரபணுப் பண்புகளை ஆராய்ந்து பார்ப்பதில் இவை சில வகை சிறிய தானிய வகைளாகவே இந்த ஆராய்ச்சியின் மூலம் கண்டறியப்பட்டன. இந்தச் சிறிய தானிய வகைகள் வறட்சி தாங்கும் விதத்திலும், மருத்துவ குணங்களைக் கொண்டதாகவும், அதிக ஊட்டச்சத்து நிறைந்ததாகவும், சுற்று சுழலில் முக்கியமானதாகவும் காணப்படுகின்றன.

Introduction

The Solega (Dravidian; Sholaga in Ethnologue) have traditionally lived in forests of the Biligiri Rangaswamy Hills (B. R. Hills) that now form part of the Biligiri Rangaswamy Temple Tiger Reserve (BRT; Figure 1). These forests are known for their diversity of plant and animal life, and many local species are firmly embedded in Solega religious, cultural and domestic life. The Solega are traditionally a hunter-gatherer people, although they have also practiced swidden agriculture for several generations. The conversion of their traditional lands into a wildlife sanctuary, combined with recent ecological disturbances, has

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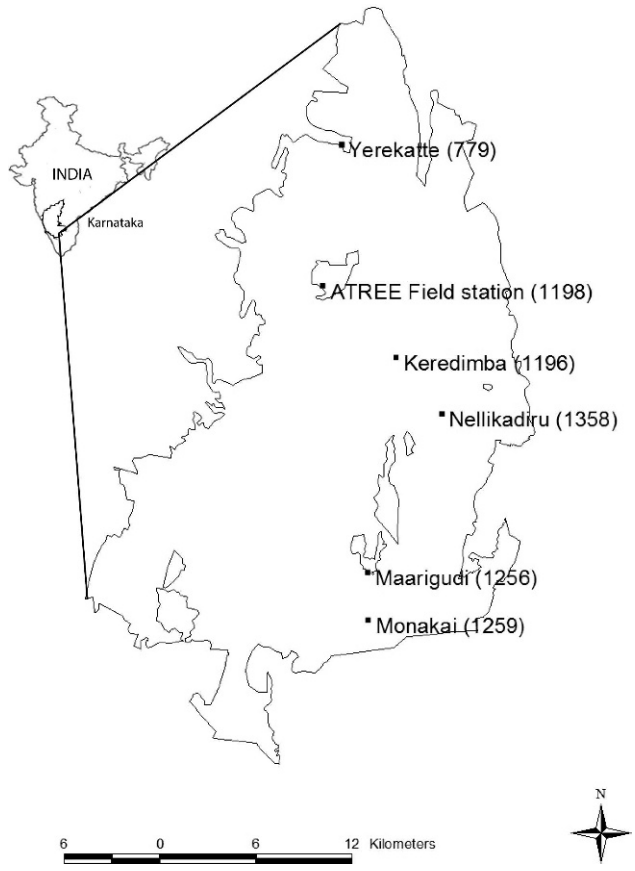

Figure 1. Map of the Biligiri Rangaswamy Temple Tiger Reserve, showing location and elevation (in meters) of the field station and five settlements visited for the picture elicitation task.

had a severe, negative impact on their way of life, and on the transmission of cultural knowledge. The Solega now live in permanent settlements, and much of the traditional ecological knowledge that all community members once took for granted is slowly being forgotten.

The BRT forests are home to approximately 250 species of birds (Aravind et al. 2001; Srinivasan and Nuggihalli 2005), and a significant number of bird species have been given names in the Solega language. In this paper, we first describe the patterns of Solega bird nomenclature, giving particular attention to which species are named and which are not, and suggesting explanations for the differences. We believe that the issue of species without local names is particularly important, but is frequently ignored in studies on ethnobiological nomenclature. Next, we describe how the naming of birds in Solega is at times a dynamic, consensus-based process, with naming conventions varying, often greatly, from village to village. In doing so, we point out instances where our data fail to agree with the universalist claims made in Berlin (1992). We do not support a totally cultural relativist point of view, but argue for a more 'interactionist' approach, where both perception and culture combine to produce

the entities that make up folk classification systems. Finally, we give an account of the important role that birds play in Solega life, myth and ritual. Agnihotri has over five years of experience observing, recording and identifying BRT birds in the company of Solega-speaking field assistants, while Si has spent close to 12 cumulative months over three field seasons at BRT documenting the Solega language with a focus on Solega ways of talking about the biological environment.

Methods

This research is based on two collections of traditional ornithological knowledge. An initial list of around 100 bird names in Solega was first compiled with the help of 4 Solega-speaking field assistants from the ATREE field station. These were Solega men whose ages ranged from around 30 to 45, and included individuals who had worked with Agnihotri in field situations while collecting data for her research on bird behavior and ecology. All field assistants lived in ***po:ḍu***, or villages, in the vicinity of the field station and the Biligiri Rangaswamy Temple. As some of the bird names collected at this stage were bare mononomials and others were binomials (of the form ***x-hakki***, where ***hakki*** means 'bird'), the Solega field assistants were also asked to judge the acceptability of adding or removing the ***hakki*** morpheme, both when the name was used in isolation, or when it was embedded in a sentence, such as ***a: marada me:le ondu x/x-hakki ku:tide*** 'there is a x/x-bird sitting on that tree.' On the basis of these initial responses, the bird names were divided into three categories: obligate binomials, where the ***–hakki*** cannot be omitted, optional binomials, where the use of ***–hakki*** is optional, and obligate mononomials, where the addition of ***–hakki*** to the name is not allowed.

For the second stage of data collection, Agnihotri compiled a Powerpoint presentation consisting of the photos and calls of around 100 species of birds known to be present in the B. R. Hills. The presentation was shown to the male inhabitants of five widely spaced Solega villages (Figure 1). Conducting group sessions ensured that the data represented a consensus opinion of the Solega living in a particular locality. Participants were shown the picture of a bird on a laptop screen, accompanied by the sound of the bird's call, and asked to provide an appropriate Solega name, if any. Solega people are familiar with photographs, and were not explicitly told that the birds in the pictures were species from the B. R. Hills. They were then asked to also relate any songs, stories or other items of folklore pertaining to that bird. As can be expected, there was considerable disagreement in the naming of some bird species, but in a majority of cases, a consensus was reached through discussion, and a single name was provided for a particular stimulus.

The names elicited in this way were assessed according to two criteria: reliability and consistency. The initial bird list compiled from the field station was a useful benchmark against which to compare the responses from the villages, but we had to be open to the possibility that there might be variation in the names of certain birds from community to community. A lexical label for a particular species was therefore considered to be reliable if it (a) matched the

name for that species in our initial list, or (b) was novel, but was accompanied by accurate information regarding the bird's behavior (including vocalizations), ecology or appearance. A name was considered consistent if participants from three or more villages provided the same name (within reasonable limits of dialectal variation). It was possible for names to be both consistent and reliable (the responses from a majority of villages also matched our initial list), reliable, but not consistent (a novel label might be recorded in a single village, accompanied by a convincing amount of supporting information regarding the bird's biology), and consistent, but not reliable (a single, in our opinion, erroneous name might be provided for a particular stimulus by participants from a number of villages). We might deem a particular response to be erroneous if the stimulus picture used in the task appeared to be misleading (if it drew attention to aspects of the bird's appearance that might not normally be visible in the wild). Such a case of mistaken identity would usually also be accompanied by incorrect biological information from otherwise knowledgeable speakers. Naturally, names could also be neither reliable nor consistent (e.g., participants might indulge in speculation when presented with an unfamiliar stimulus).

Solega Bird Nomenclature

There are two types of naming phenomena in our data that can be labelled with the term 'binomial.' The first includes instances where a bird is named using the ***x-hakki*** form, as described above. It is in this sense, the 'generic' level *sensu* Berlin (1992), that the term binomial will be used in the remainder of the paper. The second type is the more familiar situation where a subordinate member of a generic category (a specific taxon, to use Berlin's terminology) incorporates within its name the label for that category as a whole. A Solega example from our data is ***elesiṯṯe*** 'Common Tailorbird,' which is placed within the superordinate category ***siṯṯe*** 'small passerines.'

Acceptability Judgements

The acceptability judgements of the field assistants showed that only a handful of birds are named with obligate binomial lexemes, where ***-(h)akki*** is an inalienable part of the name (Table 1). An intermediate number of birds are named by optional binomials, where the ***-(h)akki*** can be used or dropped, at the speaker's volition. The majority of bird names are obligate mononomials, where the addition of ***–(h)akki*** is not allowed. A cursory scan of Table 1 appears to confirm some universals of ethnoclassification proposed by Berlin (1992). These include (1) the dominance of mononomials among what Berlin calls generic taxa, (2) a tendency for perceptually salient organisms and monotypic genera to be preferentially named, and (3) a systematic overlap between folk and scientific taxa, especially at the level of the folk genus.

The first of these generalizations is the most readily supported by our data. Overall, a majority of bird names (35 of 55, or 64%) are obligate mononomials. However, the use of the 16 (29%) optional species names in their full, binomial forms is by no means marginal; the linguistic context plays a crucial role here, as illustrated below.

(1) ***adu e:va hakki***?

that which bird

'What bird is that?'

(2) ***adu ondu sore***

that one dove

''That's a dove.''

However, if the same speaker intended to draw a listener's attention to the presence of a particular bird, s/he might spontaneously say the following:

(3) ***no:ḍ-u alli ondu sore-yakki ku:t-ide***

look-IMPERATIVE there one dove-bird sit-PERFECT

''Look, there's a dove sitting there.''

When asked, Solega speakers will invariably say that it is acceptable to omit –***(y)akki*** from sentence (3), but the majority of their spontaneous utterances contain the superordinate taxon. This has important implications for the way in which data are collected in ethnobiological studies. Traditional question and answer sessions where a researcher repeatedly asks a consultant to name dead or living specimens, either *in situ* or in a sorting task, would, in languages like Solega, clearly bias speakers' responses towards one type of label, namely the bare mononomial. Assuming, then, that the optional mononomials in Solega are more routinely used as binomials in spontaneous utterances (see the following section for further discussion), the total proportion of binomials at the 'generic' level comes to 36% –still a minority, but a significant one.

Picture Elicitation Task

We recognize that the elicitation of bird names from static, two-dimensional images, albeit accompanied by recordings of the birds' calls, is a poor substitute for sighting the bird in its natural habitat (see Diamond and Bishop 1999; Ng'weno 2010). For that reason, the following discussion is based only on responses that were assessed as either reliable and consistent or at least reliable. The results of the picture elicitation task carried out in five villages provide further support for our claim that in Solega at least, the preponderance of mononomials in speakers' responses is likely to be an artifact of the data-gathering process. Ellen (1975:202) discusses the effect of context on the naming and classificatory responses of Nuaulu speakers, stressing that ''classifications… are culturally-determined ordering devices interacting constantly with experience, infinitely variable both over time and between individuals.''

In our study, a basic quantitative analysis of the pooled responses from all five villages shows that the majority of first responses (i.e., the first name provided by a participant on viewing the picture of a bird and hearing its call) were bare mononomials (69% of a total of 237 tokens). This is unsurprising, given the artificial nature of the task and the constraints this might impose on the participants' responses. Therefore it is worth examining bird naming practices occurring in more spontaneous, connected speech. For the following extract, the

Table 1. Initial Solega bird list generated by field assistants, along with their English common and scientific names.

Solega generic names	Solega specific names	English	Scientific
Obligate binomials (6)			
araḷakki		Emerald Dove	*Chalcophaps indica#*
maṇṇakki*		Crested Treeswift	*Hemiprocne coronata#*
		House Swift	*Apus affinis#*
		Asian palm Swift	*Cypsiurus balasiensis*
		Barn Swallow	*Hirundo rustica*
ma:diyakki*		Scarlet Minivet	*Pericrocotus flammeus*
sivanakki		Greater Flameback	*Chrysocolaptes lucidus#*
gumisiyakki*		House Sparrow	*Passer domesticus#*
to:ḷiyakki		bats	
	beḷḷa to:ḷi	?	
	a:regã to:ḷi	?	
	suṇḍã to:ḷi	Indian Pipistrelle	*Pipistrellus coromandra*
Optional binomials (16)			
ba:sa:tale(hakki) **or** ***taleba:sã***		Brahminy Starling	*Sturnus pagodarum*
piggã(nakki)		Forest Wagtail	*Motacilla indica*
		Grey Wagtail	*M. cinerea*
		White-browed Wagtail	*M. maderaspatensis*
ṭhīya(nakki)		Red-wattled Lapwing	*Vanellus indicus*
kuṭru/kuṭrakki		White-cheeked Barbet	*Megalaima viridis*
		Brown-headed Barbet	*M. zeylanica*
	kambarakuṭru*	Crimson-fronted Barbet	*M. rubricapilla*
		Coppersmith Barbet	*M. haemacephala*
ke:sã/ke:sanakki^		Indian Cuckoo	*Cuculus micropterus#*
gi:jiga(nakki)		Baya Weaver	*Ploceus philippinus*
si:pi(yakki)*		Indian Silverbill	*Lonchura malabarica*
		Black-headed Munia	*L. malacca*
		Scaly-breasted Munia	*L. punctulata*
		Common Rosefinch	*Carpodacus erythrinus#*
sore(yakki)		Spotted Dove	*Streptopelia chinensis*
		Eurasian collared Dove	*S. decacto*
araḍe(y-akki)		Rufous Treepie	*Dendrocitta vagabunda*
uṇṇigirika(n-akki)		Common Myna	*Acridotheres tristis*
		Jungle Myna	*A. fuscus*
		Bank Myna	*A. ginginianus*
oggeguḍukã(n-akki)		Indian Roller	*Coracias benghalensis#*
karaḷi(y-akki)		Black Drongo	*Dicrurus macrocercus*
		Bronzed Drongo	*D. seneus*
		White-bellied Drongo	*D. caerulescens*
	doḍḍa karaḷi	Greater Racket-tailed Drongo	*D. paradiseus*
pa:riva:ḷa(d-akki)		Blue Rock Pigeon	*Columba livia*
morã(n-akki)		Blue-winged Parakeet	*Psittacula columboides*
	saṇṇa gi:ṇa	Vernal Hanging Parrot	*Loriculus vernalis#*
gi:ṇa(n-akki)		Rose-ringed Parakeet	*Psittacula krameri*
se:na(n-akki)		Hill Myna	*Gracula religiosa#*
Obligate mononomials (35)			
ko:ḷi		domestic fowl	*Gallus gallus*
	ka:ḍako:ḷi	Grey Junglefowl	*G. sonneratii*
kapuṭa^		Grey Nightjar	*Caprimulgus indicus*
		Large-tailed Nightjar	*C. macrurus*
		Indian Nightjar	*C. asiaticus*
ka:kanakoṭe		Indian Scimitar Babbler	*Pomatorhinus horsfieldii#*
ka:ge		Large-billed Crow	*Corvus macrorhynchos*
	ni:ruka:ge	Indian Cormorant	*Phalacrocolax fuscicollis*

Table 1. Continued.

Solega generic names	Solega specific names	English	Scientific
ka:nakattale		Black Eagle	*Ictinaetus malayensis#*
ka:nagoravã		Malabar Whistling Thrush	*Myiophonus horsfieldii#*
kuggilu^		Mountain Imperial Pigeon	*Ducula badia*
		Green Imperial Pigeon	*D. aenea*
		Nilgiri Wood Pigeon	*Columba elphinstonii*
bu:jore		Laughing Dove	*Streptopelia senegalensis*
kembuttã		Greater Coucal	*Centropus chinensis#*
keshṭe		Red Spurfowl	*Galloperdix spadicea*
kokkore		migratory waterbirds	
ko:gile		Asian Koel	*Eudynamys scolopacea#*
(ko: ḷi)ko:ṭã		Oriental Honey Buzzard	*Pernis ptilorhyncus#*
garuḍa		Brahminy Kite	*Haliastur indus#*
giḍugã		Common Kestrel	*Falco tinnunculus*
		Black-shouldered Kite	*Elanus caeruleus#*
gi:ṇa		Plum-headed Parakeet	*Psittacula cyanocephala*
gu:be^		Oriental Scops Owl	*Otus sunia*
		Collared Scops Owl	*O. bakkamoena*
gumma		Brown Hawk-Owl	*Ninox scutulata#*
		Brown Fish Owl	*Ketupa zeylonensis#*
		Spot-bellied Eagle-Owl	*Bubo nipalensis#*
goregosha:kã		White-throated Kingfisher	*Halcyon smyrnensis*
navilu		Indian Peafowl	*Pavo cristatus#*
natta:re^		Jungle Owlet	*Glaucidium radiatum#*
sitṯe*		small passerines	
	elesitṯe*	Common Tailorbird	*Orthotomus sutorius#*
	karisitṯe*	Indian Robin	*Saxicoloides fulicata#*
	koḍangisitṯe*	White-browed Fantail	*Rhipidura aureola*
	tu:gusitṯe*	Purple Sunbird	*Nectarinia asiatica*
		Purple-rumped Sunbird	*N. zeylonica*
		Crimson-backed Sunbird	*N. minima*
		Loten's Sunbird	*N. lotenia*
	biḷisitṯze*	Oriental Magpie Robin	*Copsychus saularis*
pa:pira^		Common Hawk-Cuckoo	*Hierococcyx varius*
maratottã*		Velvet-fronted Nuthatch	*Sitta frontalis*
		Chestnut-bellied Nuthatch	*S. castanea*
mara:kuṭuka		Rufous Woodpecker	*Celeus brachyurus#*
		Streak-throated Woodpecker	*Picus xanthopygaeus*
		Yellow-crowned Woodpecker	*Dendrocops mahrattensis*
		Greater Flameback	*Chrysocolaptes lucidus*
maragosappa:na		Black-rumped Flameback	*Dinopium benghalense*
moḍemoka		Hoopoe	*Upupa epops*
sha:ḷugã/vijju		Besra	*Accipiter virgatus*
		Shikra	*A. badius*
satṯugaba:la*		Asian Paradise Flycatcher	*Terpsiphone paradisi#*
saṇeyã*		Green Bee-eater	*Merops orientalis*
		Chestnut-headed Bee-eater	*M. leschenaultii*
		Blue-bearded Bee-eater	*Nyctyornis athertoni#*

Table 1. Continued.

Solega generic names	Solega specific names	English	Scientific
si:danakari		Jungle Babbler	*Turdoides striatus*
	doḍḍa si:danakari	Rufous Babbler	*T. subrufus*
	hullu si:danakari	Yellow-billed Babbler	*T. affinis*
		Tawny-bellied Babbler	*Dumetia hyperythra#*
haddu		raptors	
	hebbaddu	unknown	
	biḷiyaddu	unknown	
koṭrole		Red-vented Bulbul	*Pycnonotus cafer*
koṭṭipiḍiyã		Red-whiskered Bulbul	*P. jocosus*
maḷegoḍḍã		Orange-headed Thrush	*Zoothera citrina*

Superscripts roughly indicate those birds which are not visually striking: * small; ^ cryptic; # after the scientific name indicates a locally monotypic genus. The scientific identifications are from Grimmett and Inskipp (2005).

Solega consultant had been speaking for 10 minutes or so about the various birds found in his forest, and began talking about ***kuruḷi-hakki***, a species of quail. After a brief comment about how rare this species has become, he goes on to relate a folk tale that explains why the elephant has no scrotum (and why it has two large bumps on its head). Here, the transition from the previous narrative to the new species is marked by a bare mononomial, ***kuruḷi***, but in all subsequent tokens, the name of the bird appears as a binomial (shown in bold). The speech presented in the following passage is arguably far more naturalistic than that obtained from the picture elicitation task and strongly supports our view that when the morpheme ***–hakki*** is optional, the bare mononomial is actually the marked form, and the longer, binomial form the more natural choice.

> *Kuruḷi … kuruḷi hatt-hattu ip-ippattu iddõ. A:* ***kuruḷi-hakki*** *endale saṃṃa hakki. Tanna hesarave 'kuruḷi! kuruḷi! kuruḷi!' enduru koṭṭade. ''O:* ***kuruḷi-hakki*** *ha:ḍḍade.'' A:* ***kuruḷi-hakki*** *e:na ma:ḍi kittu, a:nette oitittu … a:ne ho:ga timeinalli e:n a:gottu prrr-enna a:ri kittu! A:nega a:rukku endottu. A:ne hi:ḍutte keḷage ittu … ade:na:gottu, prrr-enna a:radakka ue adara hi:ḍutte me:le ku:turtu. A:* ***kuruḷi-hakki*** *hi:ḍa e:rusuṭṭattu. A: hi:ḍu keḷage ille me:le ade, katti nalli. A:* ***kuruḷi-hakki*** *o:ḍsuṭṭattu. Gaṭa no:ḍidale ba:ri gaṭa,* ***kuruḷi-hakki*** *ira:du ipaṭie. A: tara ma:ḍittu,* ***kuruḷi-hakki****.*
>
> Quails … there used to be quails in groups of 10 or 20. The quail is a small bird. It speaks its own name, '***kuruḷi! kuruḷi! kuruḷi!***' ''Oh, I can hear quails chirping,'' (one would say.) What did the quail once do? An elephant was walking along … and at that moment, a quail flew up, 'PRRR!' The elephant got a fright. The elephant's balls used to be down there … but then, when the bird flew up, 'PRRR!' the elephant's balls jumped up. The quail had raised its balls up. The balls aren't down there, they're sitting on top. The quail had lifted them up. If you think about it, an elephant's really big, the quail's only little. But that's what it did, the quail.

An unexpected result that emerged from the picture elicitation task was the variation, from village to village, in the membership of the categories 'obligatory binomial,' 'optional binomial' and 'obligatory mononomial.' Although speakers from these villages were not systematically asked to state their preference for one form over the other, several of their responses differed from the acceptability

Table 2. Alternative or new bird names obtained during the picture elicitation task. 'Optional binomials' are those bird names from Table 1 which were initially considered to be obligate mononomials. The only exception is 'sparrow,' which was initially thought to be an obligate binomial. 'New obligate binomials' are newly-recorded bird names that were absent from the initial list.

Solega name	Common name
Optional binomials – Alternate name	
keshṭe hakki	Red Spurfowl
marakuṭuka hakki	woodpeckers
gi:ṇanakki	Plum-headed Parakeet
goravana hakki	Malabar Whistling Thrush
siṭṭe hakki	small passerines
ko:gilakki	Asian Koel
koṭṛole hakki	Red-vented Bulbul
kuggilu hakki	pigeons
pa:piranakki	Common Hawk-Cuckoo
si:dagari hakki	Jungle Babbler
gumusi hakki	House Sparrow
New obligate binomials	
arsinakki	Yellow-browed Bulbul (*Acritillas indica*)?
ka:rihakki	woodpeckers
ku:sakki, nana ku:so hakki	Puff-throated Babbler
ka:raĩyanakki	woodpeckers
mara eḷe hakki	nuthatches
sa:vakki	Flameback woodpeckers

judgments of the initial bird list. In particular, we were surprised to find that many of the obligatory mononomials from our initial name list were in fact optional binomials, at least for speakers from some villages. Table 2 gives a list of obligatory mononomials from Table 1, which, during the course of the picture elicitation task were used in conjunction with the morpheme ***–hakki***.

Some new obligate binomials were also recorded during the picture elicitation task (Table 2). Taking these new data into account, the revised counts and percentages for the different types of names are as follows: obligate binomials 10 (17%), optional binomials 26 (43%), obligate mononomials 24 (40%). Binomials (totaling 60%) now outnumber the obligate mononomials, and it is very likely that at least some of the latter category could also be used in binomial form. However, this remains to be confirmed, as many of the bird names from our initial list (Table 1) were not recorded in the picture elicitation task.

There was also a significant level of lexical variation, ranging from minor differences in pronunciation to completely novel names, as shown in Table 3. For example, ***tu:gusiṭṭe*** 'hanging small passerine,' was the term for four sunbird species provided by our field station consultants and by picture task participants from one village. The name refers to their hanging nests. However, we assessed the label ***hu: karaḷi*** 'flower drongo' from another village as reliable, because the participants were unanimous on this name and were also able to provide details of the physical characteristics (small size, bright colors), behavior (sucking nectar from flowers) and distribution (high-altitude forests) of these birds. While the first group placed these birds in the superordinate category ***siṭṭe*** 'small passerines' the second grouped them together with ***karaḷi*** 'drongos' possibly owing to their rapid, darting flight and the metallic sheen of their feathers. In a

Table 3. Variation in bird names across villages. Only those species with consistent identifications from three or more villages are shown here. The exceptions are the laughing dove, for which two names were obtained from two villages each, and the sunbirds, whose name matches the one we had in our initial list.

	Keredimba	Nellikadiru	Ma:riguḍi	Moṇakai	A:repa:ḷya
Red Spurfowl	***(ka:ḍa)kesaṭe***	***keshṭe***		***keshṭe***	
Rufous Woodpecker		***marakuṭuka hakki*** 'woodpecker'	***ka:raĩyana hakki*** 'Ka:raĩya's bird'	***ka:ri hakki*** 'calling bird'	***sa:vakki*** 'death bird'
Flameback woodpeckers	***sa:vu hakki*** 'death bird'	***ka:ri hakki*** 'calling bird'	***ka:ri hakki*** 'calling bird'	***ka:ri hakki*** 'calling bird'	***sa:vakki*** 'death bird'
Coppersmith Barbet	***kammara kuṭru*** 'blacksmith *kuṭru*'	***kammara kuṭru*** 'blacksmith *kuṭru*'	***batta kuṭru*** 'paddy *kuṭru*'		
Indian Cuckoo	***ke:sakki***	***ke:sanakki***	***ke:sã***	***ke:sanakki***	***ke:sakki***
Greater Coucal	***kembuti/kembuguti***	***kembuta***	***kembuta***	***kembuta***	
Brown Fish Owl	***gumma***	***gumma***	***gumma***	***gumma***	***gubuḷegaṃṃa***
Spotted Dove	***totore***	***sore***	***male sore*** 'mountain *sore*'	***sorehakki***	***sorehakki***
Laughing Dove	***bu:jore***	***sore***	***na:ḍa sore***	***guggalakki*** 'solitary bird'	***bu:jore***
Black Eagle	***ka:nakatale*** 'darkness of the forest'	***hebbaddu*** 'big raptor,' ***kuruḷaddu*** 'quail raptor'	***ka:nakatale*** 'darkness of the forest'		
Red-wattled Lapwing	***(kuḍḍu)biḷuka***	***ṭhĩyã***	***ti:ṭrigã***	***ti:ṭigã***	***ṭĩya:nakki***
Rufous Treepie	***araḍe***	***araḍe hakki***	***araḍe***	***moḍeva:ḷakki, kurubigo:ḍi***	***araḍe***
Scarlet Minivet	***ma:di hakki***	***ma:di hakki***	***ma:di hakki***	***ma:dilakki***	
Asian Paradise Flycatcher	***saṭṭugaba:la*** 'ladle tail,' ***asagã***		***solegitti hakki***	***ma:dilammi hakki***	
nuthatches	***mara eḷe hakki*** 'tree-climbing bird'	***maratotta*** 'tree jumper'	***maratotta*** 'tree jumper'	***maratotta*** 'tree jumper'	***maratonta*** 'tree jumper'
Red-vented Bulbul	***koṭrole***	***koṭrole***	***heṇṇu koṭṭi*** 'female *koṭṭi*'	***heṇṇu koṭṭi*** 'female *koṭṭi*'	
Red-whiskered Bulbul	***koṭṭipiḍiyã***	***koṭṭipiḍiyã***	***gaṇḍu koṭṭi*** 'male *koṭṭi*'	***gaṇṇu koṭṭi*** 'male *koṭṭi*'	
Jungle Babbler	***si:danagari***	***doḍḍa si:dagari*** 'big *si:danakari*'	***si:dari***	***si:dari***	***si:danagari***
Puff-throated Babbler		***nanna ku:so*** 'my child'	***ku:sakki*** 'child bird'	***nanna ku:so hakki*** 'my child bird'	
wagtails	***piggã***	***ni:rpiggã*** 'water *piggã*'	***pigganakki***	***ni:rpikka*** 'water *pikka*'	***pigganakki***
sunbirds	***tu:gusiṭṭe*** 'hanging small passerine'		***hu: karaḷi*** 'flower drongo'	***kokkakki*** 'beak bird'	

third village, the name ***kokkakki***, referring to the birds' long, curved beak, did not affiliate with either category.

Another example of variation is the case of the Puff-throated Babbler (*Pellorneum ruficeps*), a culturally-important bird whose call is said to be ***nanna ku:so*** 'my child!' Although there is a universally-known folk tale in Solega that explains why this bird came to lament a lost child (see below), and everyone who heard the recording of this bird's call during the picture task was able to recognize it as the bird that lost its child, a great number of people were unable to provide a name for it. While some say that they simply do not know a name for it, others reply, with obvious hesitation, that they call it the ***nanna ku:so hakki*** ('my child' bird), and only a small minority provides the far more compact label ***ku:sakki*** 'child bird.' Such names need to be treated with caution, as they are likely to be nonce coinings –words created on the spot, usually to fill a lexical need.

The Role of Perceptual Salience

It is well accepted that human perception will have a significant influence on a language community's folk classification system. Indeed, it is hard to imagine any form of human behavior that is not similarly influenced. However, it would be unwise to conclude that humans merely react to the input from their sensory organs to automatically produce mental (and by extension, lexically encoded) representations of the natural world (see Grace 1987). Despite decades of comparative linguistic research on various domains of semantics, there are few true cross-linguistic semantic universals that have withstood rigorous empirical testing (Wierzbicka 2005). It is, therefore, to be expected that different languages will also carve up the natural world in different ways, giving rise to a range of folk classifications. As previously suggested by other authors (Bulmer 1967; Hays 1982; Hunn 1982), utilitarian and other cultural factors should also play an important role in determining which organisms are to be named, and how distinctive those names should be.

In keeping with the hypothesis of perceptual salience, many of the large, visually striking birds in the B. R. Hills do have Solega names. However, a more detailed investigation into which birds are named, and which are not, reveals a far more complicated pattern. For instance, many ethno-ornithologists report that their target languages have distinct labels for birds described as ''rare and similar-appearing sibling species,'' ''small and dull-coloured'' and ''obscure'' (Diamond et al. 1999:32–33). In Solega, three species of birds, ***si:danagari***, the Jungle Babbler, ***doḍḍa si:danagari***, the Rufous Babbler, and ***hullu si:danagari***, the Tawny-billed Babbler, are recognized as distinct folk species that nevertheless belong together. All three move in noisy flocks, and their only distinguishing visual features seem to be differences in size and overall color: drab grey, dark olive and grey. The magnitude of the difference, while not remarkable, is clearly sufficient for these birds to be given related, but different names.

Given that minor visual cues can be associated with differently named birds, it is surprising that three species of woodpecker are named ***marakuṭuka*** when the differences between them are at least as prominent as those between the babblers. In a similar vein, three species of mynah, which appear at least as different as the babblers, are all called ***uṃṃigirika:nakki***, while four species of

drongo, distinguishable even from a distance by differences in body size, coloration and the shape of their ornamental tail feathers, are all called ***karaḷiyakki***. The only drongo that has a unique, specific name, the Greater Racket-tailed Drongo (***doḍḍakaraḷi*** 'big ***karaḷi***'), is large with trailing tail feathers, but also has strong symbolic meaning attached to it (see below). The perceptual salience hypothesis also cannot explain why no one was able to provide a name for any of three species of orioles, bright yellow birds with prominent calls, while the significantly smaller ***ma:di hakki*** 'Scarlet Minivet,' which is similarly colored, was correctly named in four out of five villages, especially given that orioles and minivets are equally abundant across the BRT.

When speakers are explicitly asked to mention the morphological features used as diagnostics for identifying different birds, they may not always agree on the salient features to be used. In the case of three species of parakeets, speakers are often divided on which morphological criteria should be used to distinguish ***mo:rã*** from ***gi:ɳa***. Ultimately, however, there seems to be a consensus that the Blue-winged Parakeet is ***mo:rã***, while the Rose-ringed Parakeet and the Blossom-headed Parakeet are both ***giɳa***.

> ***Mo:rã*** has a red beak, and the body is sort of blue, with a black line on the neck. ***Gi:ɳa*** has a completely green body, and a yellow beak (Jaḍegowḍa from Bangalipo:ḍu village).
>
> To distinguish ***gi:ɳa***, when the bird is sitting like this, there is a spot here. [POINTS TO RIGHT ARM] There is a spot on the right, on the wing, and another one on the left. The ***mo:rã*** does not have these (Da:segowḍa from Bu:ta:nipo:ḍu village).
>
> The one with a red head is ***gi:ɳa*** (Madegowḍa from Nellikadiru village).

The reason for this disagreement cannot be a lack of perceptual salience, as all three species are commonly seen and heard throughout the year in the B. R. Hills. Moreover, both ***gi:ɳa*** and ***mo:rã*** are significant crop pests, and can completely lay waste to an unwatched ***ra:gi*** 'finger millet' field. Instead, as Sillitoe (2002) suggests, we may have asked our consultants an inappropriate question in the first place. ''When asked how they identify particular animals, informants vary in their responses. They are not accustomed to specifying what cues they look for as naming criteria… They see any creature as a distinctive whole, considering simultaneously a range of observable cues, not seeking a few characteristic ones'' (Sillitoe 2002:1169).

As stated earlier, most of the large and easily spotted birds in BRT do have Solega names, but as Table 1 shows, a significant number (15 of 55 at the generic level) are either small or cryptic species. Similarly, a significant number of birds that are either medium to large sized, visually striking or common, or that possess distinctive calls, lack any Solega name whatsoever (Table 4). The presence of many of the visual cues that were arguably perceptually salient in differentiating various named species cannot therefore guarantee that species possessing those features will be named. Very large and visually distinctive migratory waterbirds that appear in BRT during the

winter months (December to February) are all lumped together in the category ***kokkore***. It could be argued that such species, being transient, do not leave as great an impression on the Solega psyche as birds that are present all year round. Such an argument can, however, be easily countered by the observation that many cryptic birds such as ***ke:sanakki*** 'Indian Cuckoo,' and other cuckoos are primarily recognized by their calls. ***Ke:sanakki*** is particularly significant in this respect, because its calls are usually only heard in April–May, and herald a change of season; for the rest of the year, this species is rarely seen or heard.

Berlin (1992) says that monotypic species stand out in the biological landscape due to their relative evolutionary isolation, and consequently they are more likely to be given a distinct folk generic name. Focusing solely on monotypic genera as the most likely candidates for linguistic recognition, he also suggests that a (folk) generic name for a particular monotypic (scientific) genus will be restricted in its range of application to that monotypic genus. Our Solega bird data do not support these predictions. A comprehensive list of birds inhabiting the B. R. Hills containing reliable information on scientific species names (Aravind et al. 2001), indicates that around half (46%) of the genera from Table 1 were monotypic (Figure 2). A similar analysis of the unnamed species from Table 4 reveals the same pattern, indicating that monotypic bird genera of the B. R. Hills have a 50% chance of being named in Solega (or not named). In other words, being monotypic has no effect on the likelihood that a particular genus will be named.

Berlin's second prediction on the denotational range of generic labels as applied to monotypic taxa is also challenged by our data. There are many instances in Table 1 where a Solega generic label for a monotypic genus can also be used to refer to other species, which may or may not belong to other monotypic genera. Examples include ***maṃṃakki***, which has among its referents two monotypic genera, and two species from polytypic genera; ***gumma***, which is the shared name for three monotypic owl genera, and ***saṇeyã***, the shared name for one monotypic bee-eater genus and two species from another genus of bee-eaters.

The Effect of Culture

The relationship between the degree of consistency in naming birds and their presence in folklore allows us to examine the effect of culture on ethnotaxonomy. As our Solega participants were asked to volunteer any items of folklore associated with each bird name, we were able to assess the relative cultural importance of species that are easily and consistently identified, in contrast to species that are difficult to identify. Of 100 biological species shown to our Solega participants, 53 elicited the same (or similar) labels from three or more villages and were deemed 'consistent' species. Twenty-two (41%) of these had some form of folklore or other cultural significance associated with them, including stories that explained a bird's call, avoidance practices, the significance attributed to a bird's call, invocation of the bird's name in ritual, and association of a bird with a deity. Knowledge of the ecology and behavior of a bird species was not included under the heading of folklore. Of the 47 inconsistent species (those with similar responses in fewer than three villages), only one (2%), the Brahminy Kite,

Table 4. Common, visually striking or otherwise perceptually salient bird species occurring in BRT, that do not have Solega names. The scientific identifications are from Grimmett and Inskipp (2005). Any bird up to the size of a sparrow is characterized as 'small.' Birds around the size of a myna are called 'medium,' while larger birds are considered 'large.'

English name	Scientific name	Perceptually salient features	Possible perceptual reasons for lack of name
Blue-bearded Bee-eater*	*Nyctyornis athertonii#*	large, widespread, distinctive call	
Banded Bay Cuckoo*	*Cacomantis sonneratii*	distinctive call	
Grey-bellied Cuckoo*	*Cacomantis passerinus*	distinctive call	
Blue-faced Malkoha*	*Phaenicophaeus viridirostris*	large	silent
Ashy Woodswallow	*Artamus fuscus#*	common and often seen perched in small groups on dead trees	does not make nests out of mud, like other swifts and swallows
Yellow-footed Green Pigeon	*Treron phoenicoptera*	common, seen in flocks	
Fairy Bluebird	*Irena puella#*	medium-sized, distinctive call	
Gold-fronted Leafbird	*Chloropsis aurifrons*	common, loud caller	camouflaged by its green plumage
Bay-backed Shrike	*Lanius vittatus*	medium-sized, prominent markings	found only in scrub forests
Eurasian Golden Oriole	*Oriolus oriolus*	large and bright yellow, prominent calls,	
Black-naped Oriole	*Oriolus chinensis*	large and bright yellow, prominent calls,	uncommon (a winter visitor)
Black-hooded Oriole	*Oriolus xanthornus*	large and bright yellow, prominent calls; very common	
Black-headed Cuckooshrike	*Coracina melanoptera*	medium-sized	
Bar-winged Flycatcher-shrike	*Hemipus picatus#*	distinctive markings	small
Black-naped Monarch	*Hypothymis azurea#*	bright blue, very common	small
Tickell's Blue Flycatcher	*Cyornis tickelliae*	distinctive coloration, common	small
Grey-headed Canary Flycatcher	*Culicicapa ceylonensis#*	bright yellow, common	small
Nilgiri Flycatcher	*Eumyias albicaudatus*	blue	restricted to high-altitude forests
Common Iora	*Aegithina tiphia#*	bright colors, prominent calls	small, most common in scrub forests
Indian Blue Robin	*Luscinia brunnea#*	distinctive coloration, loud, distinctive call	winter migrant, rarely seen
Yellow-browed Bulbul	*Iole indica#*	bright yellow belly, common in moist and evergreen forests, move in loud flocks	
White-browed Bulbul	*Pycnonotus luteolus*	medium-sized, distinctive call	hard to spot, usually only in dry forests
Black Bulbul	*Hypsipetes leucocephalus#*	common in evergreen forests, large size, red beak, crest on head, large noisy flocks	
Grey-headed Bulbul*	*Pycnonotus priocephalus*	medium sized, distinctive call, flocks in moist forest	hard to spot, moves within thickets
Jungle Prinia	*Prinia sylvatica*	common	small
Grey-breasted Prinia*	*Prinia hodgsonii*	common	small
Oriental White-eye	*Zosterops palpebrosus*	common, distinctive markings, move in flocks	small

Table 4. Continued.

English name	Scientific name	Perceptually salient features	Possible perceptual reasons for lack of name
Brown-cheeked Fulvetta	*Alcippe poioicephala#*	common in moist and evergreen forests, distinctive call	small
Madras Bush-Lark	*Mirafra affinis*	medium sized, and conspicuous displays in the breeding season; elaborate calls	not brightly colored; uncommon
Red-winged Bush-Lark	*Mirafra erythroptera*	medium sized, and conspicuous displays in the breeding season; elaborate calls	not brightly colored
Ashy-crowned Sparrow-lark	*Eremopterix grisea#*	medium sized, and conspicuous displays in the breeding season; elaborate calls	not brightly colored
Rufous-tailed Lark	*Ammomanes phoenicurus#*	medium sized, and conspicuous displays in the breeding season; elaborate calls	not brightly colored
Malabar lark	*Galerida malabarica#*	medium sized, and conspicuous displays in the breeding season; elaborate calls	not brightly colored; uncommon
Olive-backed Pipit	*Anthus hodgsoni*	medium sized, common	well camouflaged
Tree Pipit	*A. trivialis*	medium sized, common	well camouflaged
Paddyfield Pipit	*A. rufulus*	medium sized, common	well camouflaged
Long-billed Pipit	*A. similis*	medium sized, common	well camouflaged
White-rumped Shama	*Copsychus malabaricus*	common, medium sized, distinctive coloration, loud, distinctive call	not easily seen
Eurasian Blackbird	*Turdus merula#*	medium sized, common in evergreen and moist forest, glossy black plumage	

Birds not included in the picture elicitation task are marked with an asterisk; # after the scientific name indicates a locally monotypic genus.

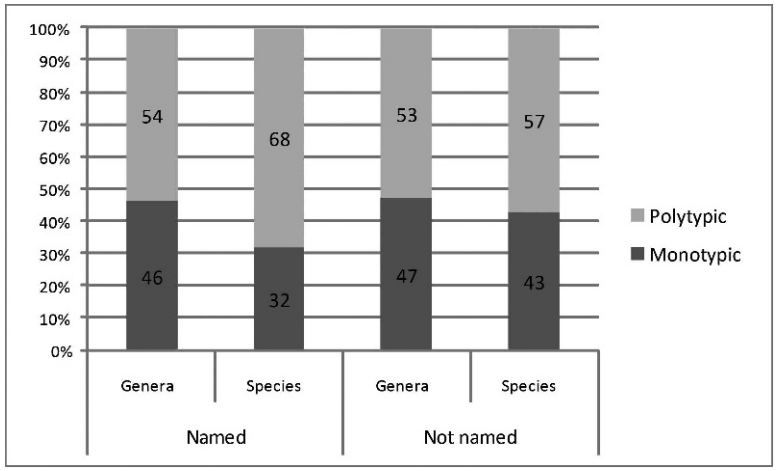

Figure 2. Distribution (in %) of monotypic and polytypic genera among the named and unnamed birds of Tables 1 and 4 respectively. The columns labeled 'genera' indicate counts of genera from the two groups; the columns labeled 'species' show counts based on total species number. For instance, *Sitta frontalis* and *Sitta castanea* from Table 1 would be counted as 1 genus (for the first column, 'Named – Genera'), but as 2 species (for the second column, 'Named – Species') under the category 'polytypic.'

possessed any associated folklore. The disparity in folklore associated with naming is starker when using the Solega folk names as a base count rather than the scientific names. Of the 60 generic Solega names in Tables 1 and 2, 35 were consistent (used in 3 or more villages) and 18 (51%) of the consistent folk names find a place in Solega folklore. This contrasts with only 1 (4%) of the 25 inconsistent names. This indicates that birds are more likely to be recognized and identified consistently across Solega communities if they have some cultural significance. Another logical possibility is that people tend to develop a certain amount of folklore around birds that can be identified and named. While we cannot conclusively reject this alternative hypothesis, the case of the Puff-throated Babbler, a bird with well-known folklore but no name, is one indication of the primacy of culture over perception.

These results support Bulmer's claim (1979) that salience is a result of many cross-cutting variables. Some of these variables are purely perceptual (e.g., large size, bright colors), some have ecological and behavioral considerations (e.g., contrast between terrestrial and arboreal, or herbivores and scavengers), and yet others are anthropocentric (e.g., birds that interact with humans or are sources of products people desire). Even if it were possible to accurately isolate the perceptual variables from all others, there might still be a considerable degree of overlap between the two groups of variables, at least for some cultures. For instance, the largest birds might be the ones that provide the most meat, while the brightly-colored species may be highly prized for their feathers. In such cases, it would be pointless to try and tease apart the dimensions of culture and perception as they would be inextricably linked.

Relation to Scientific Taxonomy

The view that folk and scientific classification systems show a remarkable degree of convergence at the folk generic level has come to be taken for granted

in recent years, and authors now rarely make the effort to point out where these convergences lie. Looking at Table 1, it could be argued that Solega bird classification closely matches Linnaean classification, on the basis that 45 out of 67 (67%) Solega bird names (counting both generic and subgeneric names) match a single scientific species. This, however, would be a trivial conclusion, as it merely indicates that something that has a name in one system also has a name in another system. A more robust test would be to compare larger groupings of generic taxa to see if these also match with the same level of congruence. Using this criterion, it appears that there are some similarities to be found between the Solega and scientific classification schemes presented in Table 1. However, such a correspondence needs to be interpreted with care, as a scientific taxonomy, rather than being an objective 'etic grid' (i.e. a grid of observable, empirically measurable facts), is more a set of working hypotheses that is continually updated and revised depending on prevailing evolutionary theories and the availability of new data (Stevens 1994). Making reference to the taxonomy of Indian birds, Ghorpade (2011:982) has warned that it would be a grave mistake to use ''current species names … promiscuously and uncritically … as correct, precise.'' Most current field guides use outdated taxonomies, with the result that the Indian ''avifauna could number anything between 1500 and 1700 or more confirmed species (including those in Burma and Afghanistan, which belong to the Indian subregion), and not just 1200–1300, as is presently understood and recorded in recent commercially oriented 'DIY' guidebooks'' (Ghorpade 2011:982). Although Ghorpade's paper deals specifically with the phenomenon of polytypic species (i.e., true species that have been demoted to the level of subspecies or race), his comments also apply to the ''poorly analysed'' bird genera of India, many of which were excessively lumped together in the first half of the 20th century, thereby reducing the total number from 600 to around 400.

Sunbirds, most of which have traditionally been placed in the large genus *Nectarinia*, provide a good example of this tendency to lump taxa. There appears to be a good match between the Solega label ***tu:gusiṭṭe*** and the scientific genus *Nectarinia*, of which there are four species present in BRT (Table 1). But with the revision of *Nectarinia*, the four species recognized as ***tu:gusiṭṭe*** now correspond to two separate genera, *Cinnyris* and *Leptocoma*, with a greatly reduced correspondence between scientific and folk categories (Oiseaux.net 2005). Such revisions have occurred for the avifauna of many parts of the world (e.g., Peterson and Navarro-Siguenza 2006 for Mexico), but the birds of Asia in general have received little recent taxonomic attention. The average ethnobiologist or linguistic fieldworker cannot predict which scientific taxa might undergo revision in the future, and therefore it is highly probable that many taxa which currently match folk categories will be revised in the foreseeable future.

Finally, it is worth pointing out that many named Solega categories in fact show a poor correspondence with scientific genera, as they are currently understood. These include ***maṃmakki*** (four genera of swifts and swallows), ***koṭã*** (three raptor genera), ***marakuṭuka***, ***sivanakki***, ***maragosappa:na*** (five woodpecker genera), and ***siṭṭe*** (at least five genera of small passerines). Moreover, eight species of dove/pigeon show little correspondence between folk generics and scientific genera, while the common yellow-footed green pigeon is not named (Figure 3).

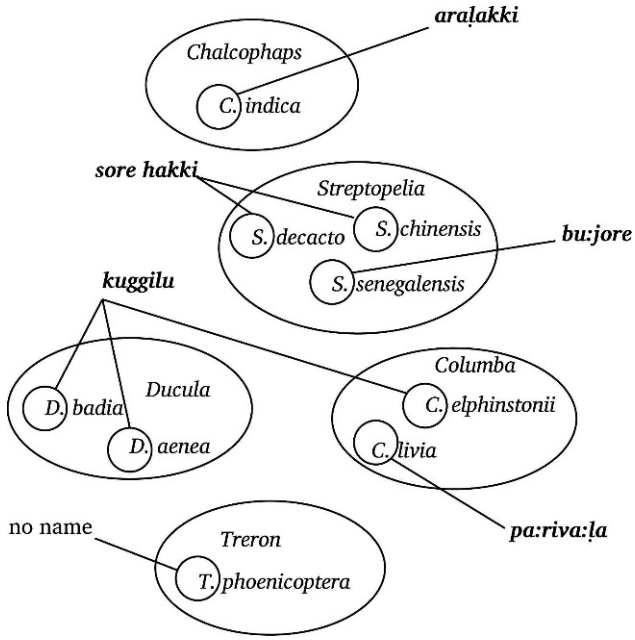

Figure 3. Pigeons/doves found in BRT, and their Solega labels, if any.

Birds in Solega Life, Myth and Ritual

In previous sections, we have argued that Solega culture can influence the naming, categorization and recognition of some bird species. Here, we elaborate on what is meant by 'culture,' by describing the very important status that birds enjoy in the secular and religious life of Solega speakers. The bird-related Solega folklore described below can be divided into seven broad categories, namely 'interactions of birds with other creatures,' 'useful signs and signals,' 'ill omens,' 'religious connections,' 'moral tales,' 'secular songs,' and 'pest species.' Table 5 shows that Solega bird folklore is dominated by two categories, the 'useful signs and signals' and the 'religious connections,' which together comprise just over

Table 5. Relative proportions of different types of Solega bird folklore. The 'folklore count' provides the number of items of folklore recorded for each category. In order, the category labels indicate: ecological interactions between birds and other creatures; useful information, especially hidden dangers, that can be obtained from bird calls; bad omens associated with sighting a bird; connections to festivals or supernatural entities; moral tales encoded in bird calls; birds mentioned in secular folk songs; and birds considered to be agricultural pests.

Folklore category	Folklore count	% of total
Interactions with other creatures	3	7.7
Useful signs and signals	11	28.2
Ill omens	6	15.4
Religious connections	11	28.2
Moral tales	3	7.7
Secular songs	3	7.7
Pest species	2	5.1

Table 6. Bird calls that have been lexicalized in Solega.

Lexicalized bird call	English name
aṭṭ-aṭṭu kere suṭṭ-suṭṭu kere	Red Spurfowl
chu chucca	Oriental Scops Owl
jirr-jirr-jirri	quail
ka:kanakoṭe*	Indian Scimitar Babbler
karra kurra tikada meṇa ki:ḷu	Large-billed Crow
kẽ kẽ gakku gakku also ***katale karu kaṭṭu***	Grey Junglefowl
sankara sara tappu	male Grey Junglefowl
ke:ta sattu makka keṭṭu	Indian Cuckoo
ke:tike ku:sa:ta	Eurasian Collared Dove
kisi kisi	Blue-winged Parakeet
kiṭri:/piṭri:/siṭri:	Flameback woodpeckers
koṭṭipiḍiyã* also ***koḍtini koḍu***	Red-whiskered Bulbul
kuĩ kuĩ	Rufous Woodpecker
kuruḷi kuruḷi	quail
kurubigo:ḍi*	Rufous Treepie
kuṭru kuṭru*	barbets
koho-koho also ***ḍak-ḍak***	Slaty-legged Crake?
giji giji also ***sirpuru sirpuru***	Jungle Babbler
guḍuga:ḍe*	type of quail/francolin?
ma:vã kena also ***pa:pira****	Common Hawk-Cuckoo
pikku pikku*	wagtails
nanna ku:so*	Puff-throated Babbler
soĩ soĩ/si:ḷ	parakeets, parrots, Malabar Whistling Thrush

Asterisks indicate bird calls that also provide names for those birds. The slashes (e.g., flameback woodpeckers) indicate inter-speaker variation, while the two terms separated by 'also' indicate two different calls attributed to a single bird by an individual speaker.

half the folkloric descriptions. One might speculate that the reason birds are said to possess such gifts is the position they occupy in the physical environment; perched on trees and other high places, they observe not only the world of humans, but also the activities of other animals. As birds communicate their messages to humans through their various calls, it is not surprising that a good number of their vocalizations have been lexicalized as ideophones in Solega (Table 6).

As far as we can tell, there is no special purpose symbolic classification scheme in Solega. During our fieldwork, we did not record any lexemes that labeled categories of 'maleficent birds' (along the lines of the nocturnal birds that according to the Nage make the sound *po* (Forth 2004)), 'birds that warn of danger,' or 'birds associated with a god,' for instance. Nor were there any named utilitarian categories such as 'birds that should not be eaten' or 'birds that tell the time.' Note that such categories do infrequently occur in the classification of plants and fungi, as all inedible mushrooms are called ***uccaŋabe***, while plants with edible greens are often referred to as ***soppu***. In the following sections, we outline some well-known pieces of Solega folklore related to birds, which had such a great bearing on whether a particular bird was recognized in our picture task. These stories and cultural beliefs were documented in an opportunistic manner, and at present we lack the data to determine whether any significant variation (comparable to the variation in nomenclature discussed above) exists in this domain of Solega folklore. However, anecdotal evidence –whenever the same story was recorded from two or more individuals– suggests that apart from

the usual inter-individual stylistic variation that can be expected of the storytelling speech genre, there is a general consensus regarding the content and intent of the stories.

Birds as Sources of Information

Some birds are regarded as important sources of useful information in Solega folklore. The five woodpeckers found in the B. R. Hills may all be labeled ***marakuṭuka*** in Solega, but two species are given alternative names that reflect their cultural significance (Table 3). Note that Table 3 shows a significant degree of ambiguity relating to the identity of these birds –the call of the bird, rather than its appearance, seemed to be the more important identifying feature, but there was still much debate on the subject of which piece of folklore belonged to which bird species. One bird, possibly a kind of Flameback Woodpecker, is also referred to as ***ka:ri hakki*** 'calling bird' as it is said to be able to predict or induce the onset of rain through its call. One informant said, ''When it gets overcast somewhere, it says ''***kui kui***.'' It relays the news. When it rains, then it calls ''***kirri***,'' see? Then it rains a lot.'' Another species of Flameback Woodpecker is called ***sa:vakki*** 'death bird' as its calls are said to signal the death of a person. Some Solega also say that the ***ka:ri hakki*** is able to warn humans of the presence of dangerous wild animals, so it is also sometimes referred to as ***sivana hakki*** 'Shiva's bird:'

> The bird says ''***piṭri:***.'' ''Oh! What's that? The bird's calling? Why?'' You want to go along a path and the bird calls (and so you think), ''Oh! I shouldn't go there, there's something there.'' If you keep going you encounter some wild animal, whether it be an elephant or a bear. And when you want to go along a path and the bird says, ''***kirri-kirri-kirri***'' (you say to yourself) ''Oh, there's nothing here.''

Although there was a surprising amount of confusion regarding the precise identities of these birds, all participants agreed that there was one woodpecker that called the rain and one that heralded death, and that these birds had very different calls. The Rufous Woodpecker, which looks very different from the Flamebacks, was also sometimes given the label ***ka:ri hakki***. We note that the actual call of the Rufous Woodpecker is best characterized as ''***kuĩ kuĩ***,'' and that of the Greater Flameback as ''***kiṭri:***.''

Barbets (***kuṭrakki***) are important in Solega folklore, not only as protectors of humans against wild beasts, but also as sources of practical information.

> It gets dark in the evening, right? That's when the barbet sings. ''Oh! That's the son-in-law barbet singing now! It's time!'' Then, when the sun sets completely, another barbet will sing. This is the father-in-law barbet. We tell the time just from listening to the barbet's song … when the second barbet sings, and then the third barbet sings, it gets dark. It only sings three times … when you hear that third sound, you should start cooking.

The barbet (in particular, the White-cheeked Barbet) is described as an accurate timekeeper, with its late afternoon and evening calls telling humans that it is time to stop work and return home from their fields.

Another timekeeping bird is ***ke:sanakki*** 'Indian Cuckoo.' Unlike the barbet, however, whose call signals a diurnal rhythm, the cuckoo's song is heard only in the months of April and May. Its song heralds the first rains of the year, or ***munga:ru***, but the translation of its song, ***ke:ta satto, makka keṭṭo***, has a more sinister meaning: ''Keta died, his children cried [lit. things were bad for his children]. After the father died, the children were left destitute.''

Birds with Supernatural or Ritual Connections

Large owls, ***gumma***, are also birds of ill omen, possibly due to their human-like faces, and the fact that they are usually seen at night. Solega people even may avoid looking at a picture of a ***gumma***, and the threat of this bird is often used to frighten young children into obedience: ''***gumma bandade, summane malagu***'' ('the ***gumma***'s coming; go to sleep!'). If one hears a ***gumma*** calling while watching over one's crops at night, one dares not shoo away any animal feeding on that crop, as it could be a sorcerer in animal form. A ***gumma*** calling a single time signifies the presence of a sorcerer, but if it calls twice, it is just a regular ***gumma*** that means no harm. Negative attitudes towards owls have been reported from other parts of the world. An owl is regarded as the watchman of a witch or sorcerer by the Mbuti of the Congo basin (Ichikawa 1998), while the Tembo, who live nearby, claim that ''sorcerers use it [the Spotted Eagle-Owl] as a telephone'' (Kizungu et al. 1998:113). The Sahaptin of the Pacific Northwest consider owls to be ''a dangerous being, an Indian doctor and an omen of death'' (Hunn 1991:140), and Forth (2004:69) similarly reports that the Nage of Indonesia speak of owls as the form assumed by the maleficent spirit of a witch. Interestingly, the Nage also attribute special significance to the number of times the call of an owl is heard, as an uneven number of calls is meant to indicate the nearby presence of a witch. In many parts of India, however, equating someone with an owl simply means that that person is stupid.

Mystical powers are attributed to other birds such as the smaller owls ***gu:be*** and the ***ko:ṭã***, or Oriental Honey-buzzard. The ***ko:ṭã***'s unusual courtship vocalizations, consisting of a long series of rapid, staccato bursts whose pitch varies over time, are said to be a sign that the bird has been possessed by a god. The Emerald Dove, ***araḷakki*** or 'castor bird,' also has divine connections. Its Solega name refers to its habit of feeding on the seeds of the castor plant *Ricinus communis* L., which grows wild, but is also cultivated by the Solega. A Solega myth explains that the bird collects castor seeds not for its own sustenance, but as a service to a god who needs oil for his hair. It stores the seeds in its crop, flies to the location of the god, and regurgitates them in front of him.

A number of prominent Solega folksongs, which are sung at festivals and celebrations, make reference to birds. The simplest of these songs honors the mud-nest-building swifts and swallows, or ***maṃṃakki***, which are common in the B. R. Hills., The birds are referred to as ***maṃṃakki ma:vã*** 'father-in-law mud-bird' (the *ma:vã* could simply be a honorific) in the song, which is open-ended, and can be repeated any number of times by naming different tree species in the second line:

Maṃṃa tege tege maṃṃakki ma:vã,
Araḷu kaḍḍella maṃṃakki gu:ḍu.

Collect mud, o father-in-law swift,
Swift nests among the castor branches.

A far more important and lengthy song cycle called ***ha:ɖuke*** is sung at the shrine of a god on his festival day, from dusk till the following dawn. The sequence of themes covered in the ***ha:ɖuke*** is such that the final few stanzas, which consist of invocations of certain birds, coincide with the first calls of those birds in the forest as the sun rises.

Birds as Moral Arbiters

The call of the Puff-throated Babbler (called ***ku:sakki*** by some Solega participants) is a death lament. It is said that a mother and her baby, both exceedingly thirsty, stopped to rest, and that the mother, in her haste, proceeded to drink some water without first seeing to her infant. Her act of selfishness caused the infant to die. Stricken with grief at her failure to care for her own baby, the mother turned into a bird, and to this day, calls out ***nanna ku:so nanna ku:so*** 'My child! My child!' The Common Hawk-Cuckoo, or ***pa:pira***, was witness to an act of incest between a man and his daughter-in-law. The bird announces news of the violation of this important taboo by means of its repetitive, three-note call.

Miscellaneous Folklore

Some birds are afforded a privileged position by the Solega on the basis of observed behavioral and ecological traits. The Greater Racket-tailed Drongo ***doɖɖa karaḷi***, which is able to mimic the calls of other birds with great accuracy, is thought to use this ability to attract birds of other species into mixed-species flocks (Goodale and Kotogama 2006). The significance of such conspicuous gatherings of birds, and of the possible role of the drongo in maintaining them, is not lost on the Solega; the drongo is also called ***ko:luka:rã*** ('rod bearer'), the title given to a traditional Solega elder charged with maintaining peace and order, and meting out punishment to wrongdoers: ''We call it the sheriff. It's like a counselor to all the birds. [***doɖɖa karaḷi***]''

An identical belief exists among the Mbuti of the Congo basin, and for much the same reasons, but for a different bird species that also leads mixed-species groups. According to Ichikawa (1998:112), ''a species of greenbul called ***mbilie*** (*Criniger calurus*) is said to be the chief of the birds, because, according to the Mbuti, other birds will gather around him, when it calls '***mbilie***!'''

An unrelated point of cultural significance is that the ashes obtained from burning the feathers of the drongos (any of the six species found in BRT) were smeared on the forehead of Solega men who are about to set out on a honey collecting expedition. This may be related to the drongo's habit of pursuing migrating bee swarms, and picking off stragglers.

The greater proportion of Solega bird folklore, then, is devoted to items of strong utilitarian or other cultural value; in fact, all the categories mentioned above, except for 'interactions of birds with other creatures' can be said to have similar value. One could easily imagine any language having an inventory of myths or folk tales that focus on the morphological features of prominent plants or animals in their environment, 'how the peacock got its tail' or 'why the cockatoo is white,' for instance. The only such story that we have encountered in Solega is the

incident of the elephant and the quail mentioned above. Some Solega have mentioned that the slender curved beak of the ***moḍemoka*** 'Hoopoe' is indicative of how this bird originated from members of the ***cama:r*** 'leather tanner' caste who routinely use similarly shaped needles. Moreover, the items of folklore in the 'useful signals' category have, as their referents, not the appearance of a bird in the B. R. Hills forests (indeed, the annual arrival of the migratory ***kokkore*** is not mentioned in any Solega folktale), but the vocalizations of certain species.

Bulmer (1979) has noted that the bird classification of the Kalam of the New Guinea Highlands is influenced by ritual or mystical significance (e.g., as totems or omens), utilitarian value (as a source of food or feathers) and perceptual salience (large size and bright colors). In addition, Bulmer (1979:65) points out that ''the way in which birds … interact spontaneously with man, or are interpreted as doing so'' also underlies Kalam discrimination and evaluation of birds. Our work with the Solega strongly suggests that they too name and talk about some birds not merely because they are large, common or colorful, but also because they perceive these birds to be a source of meaningful signals or interactions. Evidence from other biological domains supports the view that meaningful signals and interactions –real or potential– are highly salient to the Solega. For example, the calling of a common house gecko (*Hemidactylus frenatus*) confirms the occurrence of a bad event if one is talking about the possibility of bad weather, or a bad harvest, and the lizard calls at the same time. The mass chirping of cicadas is a predictor of rain (as in many cultures, the connection between heavy rain and the croaking of frogs is also noted by the Solega), and if a dog is seen barking for no apparent reason, there could be a ***daiya*** 'bad spirit' nearby.

'Folklore' is probably not an entirely appropriate umbrella term for the diverse items of cultural knowledge contained in the above categories, as many of the Solega beliefs are undoubtedly based on a core of what a western-trained scientist might consider to be biological fact. The example of the Greater Racket-tailed Drongo, considered a leader among birds, is a prime example. Some of the useful information that bird calls are said to relay to humans may also have a biological basis; many species of birds can produce special alarm vocalizations in addition to their standard calls, which may serve to alert actual or potential mates, or even other members of their flock to the presence of a predator. Magrath et al. (2007) have shown that birds that perceive an alarm call will hide or flee, and the Solega's belief that certain woodpeckers' calls can indicate the presence or absence of danger may be based on such observations. Similarly, the frequent co-occurrence of the calls of some birds like the ***ka:ri hakki*** or the ***ke:sakki*** with the onset of rain or the start of a new season is frequently attested by visitors to the B. R. Hills. Such an association with rain is even encoded in the formal English names of birds such as the Rain Quail (*Coturnix coromandelica*), which appears ''in certain districts coinciding with the opening of the rains… It is generally a bird of the plains, but on the advent of the rains will penetrate up to 6,000 feet in the Himalayas and Nilgiris'' (Finn 1915:265).

The relationships between certain birds and plants are sometimes encoded in Solega lexemes, a prominent example being ***araḷakki*** 'castor bird,' whose story was described earlier.

Ornithologists have noted that this bird does indeed have a particular affinity for the seeds of the castor plant (Hume 1889). The seeds of the castor plant are known to be extremely poisonous to humans and other mammals, but it has been shown that birds have a higher tolerance to this plant's toxin (Jones 1947). The dove's regurgitation of castor seeds in the Solega story may indicate a physiological mechanism to deal with the ill effects of ingesting too high a dose of toxin.

Concluding Remarks

Our research demonstrates that bird naming in Solega is not a straightforward affair and that it would be naïve to assume that there is a lexicon of universally accepted 'correct' bird names in the language simply waiting to be elicited. The initial name list presented in Table 1 was approved by numerous Solega from villages situated around the field station. However, the picture elicitation task, carried out in villages far from the field station, showed that there were other ways of naming many of the birds on that list; the variation we encountered ranged from transparent dialectal differences in pronunciation to completely unrelated lexemes (Table 3). Moreover, while we were confident about our field assistants' judgments on the acceptability of omitting ***–hakki*** 'bird' from the generic names shown in Table 1, Solega speakers from other villages clearly had different ideas about when this morpheme should be used (Table 2). This situation is reminiscent of the ethnobiological knowledge of the Wola people of Papua New Guinea, as described by Sillitoe (2002). Faced with a significant level of disagreement among his consultants regarding the identification and classification of bird species, Sillitoe argues that it is futile to attempt to compile a single ethnotaxonomy for a community like the Wola, which is characterized by intellectual egalitarianism and acephalous politics. The Wola display ''considerable tolerance of dissonance'' (Sillitoe 2002:1167), and, as a result, their animal classification scheme ''is inherently dynamic and subject to negotiation; there can be no closure or final bounded version, no authoritative comprehensive arrangement'' (Sillitoe 2002:1169).

Many Solega examples discussed above support this view. When discussing the common and culturally important woodpeckers, Solega speakers seemed quite at ease with changing their minds about which labels to apply to which woodpecker species, and which birds to group together under a single category. The Solega labels ***marakuṭuka***, ***sa:vakki*** and ***ka:rihakki*** were known to most participants, but there seemed to be only a loose correspondence between the names and the birds. Ultimately, the most consistent pieces of information were the stories and omens associated with each bird name.

A further example is that of the Asian Paradise Flycatcher, which, in our initial name list (Table 1) was called ***saṭṭugaba:la*** 'ladle tail.' To our surprise –as this is a visually highly distinctive bird– this name was not recorded once in any of the five villages visited during the picture elicitation task. Three plausible names were recorded from three villages, while participants from the remaining two villages said that they had definitely seen the bird and were able to describe its appearance, including its sexual dimorphism, and habits, but did not have a

name for it. This example also demonstrates how perceptual distinctiveness is not the sole force that shapes folk taxonomies.

The Solega have numerous folktales that revolve around birds, with these creatures frequently playing the role of a moral arbiter or herald of human frailty. Some are associated with divine entities, while others are elevated to the status of a divinity at festival times. A significant part of Solega bird folklore focuses on their ability to provide useful information to humans, from the passage of seasonal and diurnal cycles, to the presence of danger. Although we found no evidence of specialized vocabulary to denote symbolic or other cultural categories, there is robust evidence to indicate that birds with associated folklore are more easily recognized than birds without.

Our data do not support some predictions made by Berlin (1992), instead showing that belonging to a locally monotypic genus does not increase the chances of a bird being named. With regard to nomenclature, we demonstrate that while bare mononomials dominate the responses in artificial situations, such as the picture elicitation task, birds are more likely to be referred to with their full, binomial names in spontaneous speech. Finally, the apparent correspondence between scientific classification and Solega ethnotaxonomy appears to be superficial when larger generic groupings of birds from both systems are compared. While some Solega groupings neatly match their Linnaean counterparts as they are currently recognized, some show little to no correspondence. Additionally, several prominent or common species of bird present in the B. R. Hills remain unnamed (Table 4), while visually unremarkable birds such as the Puff-throated Babbler and the quail are prominent in the Solega psyche.

The findings presented in this paper illustrate that neither perception nor culture can, in isolation, explain the architecture of such a complex social and linguistic construct as a folk classification. Simple answers to complex problems are always intellectually satisfying, especially when they appear to allow comparisons across disparate systems. Unfortunately, such one-size-fits-all theoretical frameworks also carry with them the risk of making the complex phenomena they seek to explain seem far simpler than they really are. For decades, biomedical researchers vigorously debated whether it was nature or nurture that was responsible for the incredible diversity of physiological, morphological, behavioral and pathological phenotypes that make up the human condition. Both camps were able to cite a great deal of valid empirical evidence to back up their viewpoints (Logan and Johnston 2007), which seemed to be so diametrically opposed as to be irreconcilable. Ultimately, however, all reasonable scientists were forced to admit, when faced with a wide array of experimental studies, that human development is the result of the interdependent action of both heredity and environment (Wyman 2005). In other words, an organism's genetic makeup bestows certain predispositions, but external factors can radically alter its seemingly pre-ordained developmental trajectory. Recent research in psychology and linguistics has echoed such conciliatory attitudes, with an increasing number of studies demonstrating an effect of culture on cognition as a whole (Nisbett and Norenzayan 2002), and on language in particular (e.g., Dunn et al. 2011). Our data do not lead us to

believe that the Solega classification of birds is ''largely immune from the variable cultural determinants found in other areas of human experience'' (Berlin 1992:9) any more than they support the hypothesis that the taxonomic systems of 'primitive' peoples ''lack any consistent underlying logical principles'' (Hallpike 1979:206). Instead, we acknowledge the different, but interdependent, roles of perception and culture in the creation of folk taxonomies.

Note

Retroflex consonants are represented by *ṭ, ṇ, ḍ, ḷ,* while *ã* indicates a nasal vowel. Long vowels are written as *a:*, and *t, d* and *n* are dental consonants. Unaspirated and aspirated unvoiced post-alveolar affricates are transcribed as *c* and *ch* respectively.

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