A NATIONAL RED LIST FOR THE BIRDS OF MALAYSIA

Duncan A.I. Lang*[1], David Bakewell[2] & Maketab Mohamed[3]

[1]*Environmental Resources Management (M) Sdn Bhd, 6th Floor Menara BRDB 285 Jalan Maarof, Bukit Bandaraya, 59000, Kuala Lumpur, Malaysia*
[2]*Ecopermai Sdn Bhd, 3 Lebuh Bukit Kecil 4, Taman Sri Nibong, 11900, Penang, Malaysia*
[3]*Universiti Teknologi Malaysia, Faculty of Chemical Engineering, UTM, Skudai, 81310, Johor*

*Corresponding author: Duncan.Lang@erm.com

ABSTRACT

Protection of Malaysia's unique biodiversity is no longer the remit solely of NGOs and government departments, but is becoming increasingly important for the public / private sector business planning and Corporate Social Relation (CSR). With this increased attention on sustainable development, there is a great need for accurate, Malaysia specific tools for biodiversity assessment and one such tool is National Red Lists. The IUCN Global Red List is the most widely-used biodiversity assessment tool worldwide. The generic Red List methodology means it can be applied nationally, therefore providing a highly useful assessment of species' local status. Malaysia has a rich bird diversity encompassing all habitats. What is currently unknown is the status of species; their population sizes, whether these are declining, and to what extent they are threatened with extinction in Malaysia. This project, by way of producing the National Red List for the birds of Malaysia, aims to address these questions providing for the first time a scientifically rigorous basis upon which to make assessments of bird conservation status at a national level. It will be an essential tool for identifying conservation priorities, will provide a baseline from which future conservation efforts can be measured, and will raise awareness of threatened species throughout the country.

Keywords: IUCN Red Lists, National Red Lists, Malaysia, Birds, Extinction, Conservation.

INTRODUCTION

Birds represent one of the most visible faunal groups, being present in every habitat type from primary forest to urban gardens. Like so many species groups in Malaysia, birds are poorly understood and limited information is known about population sizes, distribution, habitat requirements, ecology and conservation status (Wells, 1999; Smythies, 1999). While this situation may have seemed of purely academic consequence, today the threats to birds and all other components of the natural world from habitat loss, degradation, hunting, invasive species and climate change (Sodhi *et al*, 2010; Corlett, 2007) are unprecedented in the country's history and as such, it is now of the utmost importance to aid all future conservation efforts that this information is collected and compiled into one comprehensive Red Data List for the Birds of Malaysia.

This paper has three objectives. Firstly, to provide a background to the status of birds in Malaysia, what conservation measures are in place, what threats they are facing and why a National Red List is required. Secondly to provide an introduction to the Red List and what it might look like and aim to do. And thirdly, to provide details of the ways in which the Red List could be used once completed for conservation management, priority setting and to benchmark future conservation efforts.

An Overview of the Birds of Malaysia

Malaysia is situated in one of the world's biodiversity hotspots (Sodhi *et al*., 2004; Myers, *et al*., 2000). It is ranked high in many lists for the world's most bio-diverse countries' (NRE, 2009) and in terms of birds, it is estimated that 742 species are present in Malaysia (NRE, 2009). In Peninsular Malaysia 662 species alone have been recorded (MNS-Bird Conservation Council, 2012) and in Borneo 592 and 557 species are thought present in Sabah and Sarawak respectively (Davison and Yeap, 2012).

In Peninsular Malaysia, only four species are endemic or near-endemic (MNS-Bird Conservation Council, 2010). In Borneo, the recent trend for splitting species and the 2009 recording of the still unconfirmed Spectacled Flowerpecker (Edwards *et al*., 2009) has resulted in a total of between 38 and 52 endemic species, depending on which taxanomic authority is consulted (Phillipps and Phillipps, 2011; Myers, 2009; Mann, 2008; Yeap *et al*., 2007; Smythies, 1999). All endemics listed for both Peninsula Malaysia and East Malaysia may not strictly be country endemics with populations thought to spill over into neighbouring political territories including Thailand, Indonesian Borneo and Brunei (Yeap *et al*., 2007). However, while there may be very few true Malaysian endemics, if species are looked at in a regional context including all Sundaland (Sumatra, Peninsular Malaysia and Borneo) then a large proportion of the total can be thought of as endemic, being only found in Sundaland (Jeyarajasingam and Pearson, 2012; Birdlife International, 2003; Wells 2007, 1999; Sodhi *et al*., 2004; Smythies, 1999).

Little is known about all but the most well studied species in Malaysia, with basic information, like distribution and population sizes largely missing (Wells, 1999; Smythies, 1999). Most distribution maps are based on habitat preference (Phillipps and Phillipps, 2011; Myers, 2009; Wells, 2007, 1999) with data collected largely clumped to well-known and studied locations. Many areas remain almost devoid of data, and seasonal movement within the country is not well understood for most species. Of what is known, a large proportion of species are thought to be forest dependent (Birdlife International, 2003; Wells, 2007; Smythies, 1999) relying on lowland mixed dipterocarp forest, lowland evergreen forest, peat and freshwater swamp forest, heath forest or lower and upper montane forest. In Peninsular Malaysia it is thought that over half of the sub-set of resident birds mainly utilise lowland forest types (Jeyarajasingam and Pearson, 2012; Wells, 1999) and in East Malaysia this trend is mirrored, although the presence of the various mountain ranges of Sabah and Sarawak have provided additional opportunities for speciation to occur, meaning the number of montane species is even higher than those present in Peninsular Malaysia (Smythies, 1999).

According to the Global IUCN Red List (IUCN, 2012a) the number of species listed as threatened (defined as Vulnerable (VU), Endangered (EN) or Critically Endangered (CR)) is relatively limited, with 27 extant, non-feral species listed for Peninsular Malaysia (MNS-Bird Conservation Council, 2012) and 23 and 22 species listed for Sarawak and Sabah respectively giving a total of 37 species for the whole country (Davison and Yeap, 2012) which is a slight increase from the number listed by Yeap *et al*. (2007) of 33. While this data might suggest that most species in Malaysia are relatively secure at a global level this is not necessarily the case, as firstly, a further 105 are listed as Near Threatened (NT) (Davison and Yeap, 2012), and are therefore of conservation concern (largely due to their forest dependence) and secondly, the global status has only limited relevance at a national level. Many species may be nationally much rarer than listed at a global level. Milky Stork (*Mycteria cineria*) for example, comprises of a population of fewer than 10 individuals in Malaysia, and should therefore be thought of as nationally Critically Endangered (CR), rather than the global listing of Vulnerable (VU). Grey-breasted Babbler (*Malacopteron affine*) as another example is also globally listed as Near Threatened (NT) but is extremely rare in Malaysia.

Conservation Efforts for Birds in Malaysia

In Malaysia, a large proportion of species have at least some level of formal protection under national or state law (NRE, 2009). However, while protection levels may appear adequate, enforcement is extremely difficult, as exemplified in the Lambir Hills National Park. This fully protected area was reputed to have an almost intact vertebrate fauna in 1984 but by 2007 the forest had largely been defaunated, with 90% of species totally protected under Sarawak law having been extirpated, including birds (Harrison, 2011). Furthermore, while the birds themselves may have some formal protection, the habitat within which they live and which supports them often does not, rendering their protection of little value to their long term survival (Harrison, 2011).

The Malaysian protected areas network (areas which are totally protected) covers only 5.9% of the total surface area of the country and therefore represents a small but significant resource for bird species (NRE, 2009). A much larger area of 43.7% has also been designated as Permanent Forest Reserves (PRFs), and arguably may be of much greater importance, although it is unclear as to how these PFRs are managed at a state and federal level and what protection they have. In addition to these government led designations, in 2007 the Malaysian Nature Society produced the countries first list of Important Bird Areas (Yeap *et al*., 2007). This publication for the first time listed the key sites of international importance for birds in Malaysia. Many of the sites include areas already included as part of the nationally protected network although many others are not.

While all these efforts have undoubtedly progressed conservation in the country, without the key data on species' national conservation status, distributions and population sizes, it is unlikely that the current network of formally protected areas and IBAs will have captured all key species that are nationally threatened. Many of the existing protected areas were not designated specifically with birds in mind (Yeap *et al*., 2007) and the network of IBAs is geared towards protection of globally threatened species and not those threatened at a national level (Yeap *et al*., 2007; Collar *et al*., 2001).

Current Threats

While the loss of the Green Peafowl (*Pavo muticus*) and White-winged Duck (*Cairina scutulata*) from likely overexploitation may be the only documented extinctions of birds in Malaysia (Jeyarajasingam and Pearson, 2012; Medway and Wells, 1976), it is clear that the key threat facing most bird species is from habitat loss and the secondary impacts that this causes (Bryan *et al*., 2013; Sodhi *et al*., 2010; Smythies, 1999; Wells, 1999).

The loss of forest is well documented in Malaysia. Smythies, in his first edition of the Birds of Borneo reported forest cover across the island at about 90% in 1960 and by 1990 for the fourth edition this had fallen to about 72% (Smythies, 1999). Since 1990, deforestation rates have been tracked more accurately and in South East Asia between 1990 and 2000 the annual deforestation rate has been estimated at 1.3 % by Sodhi *et al*. (2010). More recent work by Miettenen *et al*. (2011a, 2011b) used remote sensing data to estimate forest loss between 2000 and 2010 for mangrove, peat swamp forest, lowland evergreen forest, lower montane forest and upper montane forest, estimating the total loss in Malaysia to be 13.2 % across this period, or 1.4 % per year. Some forest types are clearly under much greater threat than others, with upper montane forest relatively secure while peat swamp forest and lowland evergreen forest are under particular threat, with losses for the former estimated to be 45.3 % between 2000 and 2010 for Malaysia, and in Sarawak, loss of peat swamp forest over this period was estimated to be as much as 55 %, with only 26 % remaining forested in 2010 (Miettenen *et al*.,

2011a, 2011b). Analysis by Fisher *et al*. (2011) also identified that economically this trend is unlikely to change without clear government conservation policy due to the high value of these lowland areas to plantation developers. With these above figures in mind, it is therefore particularly worrying that over half of all Malaysia's resident bird species are dependent on these lowland forest types which are under such threat (Wells, 1999) and that, as stated above, we still know relatively little about species distributions and populations in these areas.

Complete loss of habitat is an obvious consequence of conversion to plantations. However, in many instances this is the last step in the process that is initially triggered by logging (Pinard and Putz, 1996). In East Malaysia, Bryan *et al*. (2013) recently estimated that 80 % of the land surface had been affected by logging and high impact clearing operations from 1990 to 2009. While logged forest can still support high biodiversity (Johns, 1996) it is essentially a modified habitat and as such the community it supports may become modified too (Cleary *et al*., 2007; Johns, 1996; Lambert, 1992). Although direct impacts from timber extraction are important, the secondary and induced impacts that often result from opening up forest are of more concern, with fire, fragmentation, edge effects, introduction of invasive species, increasing hunting pressure and competition being some of the key impacts (Bryan *et al*., 2013; Sodhi *et al*., 2010; Putz *et al*., 2001). It is often these that present the greatest direct threats to faunal species following habitat loss (Harrison, 2011; Laurance *et al*., 2009).

Why a Red List is needed

By way of developing a National Red List for the Birds of Malaysia, it is hoped that many of the issues highlighted above will start to be addressed. The Red List would scientifically define the conservation status of all birds in Malaysia for the first time, filling the gap between the global IUCN Red List and national species protection levels. The Red List would provide valuable information on distribution and abundance of species, particularly for those that utilise lowland forest habitat which is under such huge threat. This would help identify the significance of impacts on these habitats enabling conservation managers to better justify their protection and to identify sites that are irreplaceable.

The Red List would enable conservation managers for the first time to focus limited resources where needed most for birds, making the most of the existing protected area and PFR network, and to help support the expansion or upgrading of the protected area network, as well as protection of individual species where needed.

The Red List would also be an essential tool in establishing a benchmark measure of the status of species to assess future progress and would provide a valuable guide particularly at a strategic planning level as to where development can be undertaken with minimal impacts on the bird community, thus helping to promote sustainable development.

METHODOLOGY

As the Red List is yet to be completed, the proposed methodology provided here may be subject to some alteration prior to undertaking the project.

Official IUCN guidelines for creation of Regional/National Red Lists have been available since 2003 (IUCN, 2012b) and will be followed in creation of this Red List. These guidelines lay out a clear, repeatable protocol that can be used, and many countries have adopted these since 2003, producing

National Red Lists that can now be compared consistently over time to create a National Red List Index of species status (IUCN, 2013a). Use of the internationally recognised protocol also allows species assessments conducted in separate countries to be accurately compared across borders, leading to a better understanding of biodiversity status at a regional level.

The process of creating a Red List is broken down into the following stages:

1. All information relevant to species' conservation status is collected;
2. An assessment of extinction risk is made for all species within a country, using the IUCN Red List Categories and Criteria and the IUCN Regional / National Guidelines;
3. A national workshop is held in which local species experts review the assessments, make any corrections necessary and add any additional information; and
4. The assessments are collated into a National Red List document. This should ideally contain all assessed species, not just those classed as threatened.

For this project, it is expected that the bulk of the work will be required for Stage 1 in collection of data and Stage 2 for undertaking the assessment as expanded below in further detail.

Stage 1: Data Collection

As part of the data collection process, the first document that will need to be completed will be the development of a data standard. This document will provide specific criteria about data eligibility for the Red List such as data age and type which will enable the collection of data by multiple researchers and will enable data for all the Red List criteria including population reduction, geographic range, and population size to be collected. Data collected will also need some form of verification, as specified within the data standard.

Sources of data will be wide and varied and will rely on full engagement with the birding community. Sources will include but not be limited to: current and grey literature records; online data sources (including Bird-i-Witness (BIW) website, which is a RSPB/BirdLife sponsored site, and Observado); GIS based habitat information; private data records (of leading regional ornithologists); verifiable records from the birding community (where date and location information is available, preferably with a photograph); and data from government sources.

Due to the often clustered nature of the data from well-known birding locations, once the initial data has been compiled, gaps in the dataset will be identified and dedicated field surveys will be planned and carried out where necessary. It is expected that surveys of key species (e.g. galliformes) and in under recorded locations such as Kelantan (Wells, 2013 *pers comm*.) will be required, and it is also expected that surveys in lowland habitats under particular threat will be needed to speed up data collection, enabling subsequent conservation actions to be justified.

Stage 2: Species Assessment

Towards the end of the data collection exercise, the species assessment stage will start. This process will begin by deciding whether an assessment should be carried out on a species or not. As outlined in the Figure 1 flowchart below (IUCN, 2012b), Red List Assessments are usually carried out on species

that are resident or have regular visiting populations. Rare vagrants will largely be excluded from the analysis other than where the species global Red List status is threatened (e.g. Yellow-breasted Bunting (*Emberiza aureola*)), in which case it should be included.

For those species that are included, a standard assessment methodology will be developed and agreed following the criteria set out by the IUCN (IUCN, 2012a; IUCN, 2012b; IUCN, 2011; IUCN, 2001) [1]. This process is not considered in great detail here as the method is well documented and complex (IUCN, 2012b). However, to enable consideration of all assessment criteria, two key components regarding species geographic range will be required: firstly, the development of a habitat model to provide detail of past, present and predicted habitat extents building on work undertaken by DWNP (2010) and secondly, for each species assessed, a model of species habitat requirements will need to be built. Once these two components are created, it will be possible to run the models and estimate species *Extent Of Occurrence* (EOO) and *Area Of Occupancy* (AOO) to provide a conservation status based on the geographic range criteria.

This geographic range based assessment will not be sufficient alone, and an essential part of the assessment process will be to test predictions against confirmed species data records to refine the model. Collected data and records will also be used to consider other Criteria (such as population size and decline) to eventually provide a final Conservation Status for discussion in Stage 3.

Figure 1. Flowchart to determine which taxa to include in a Regional / National Red List
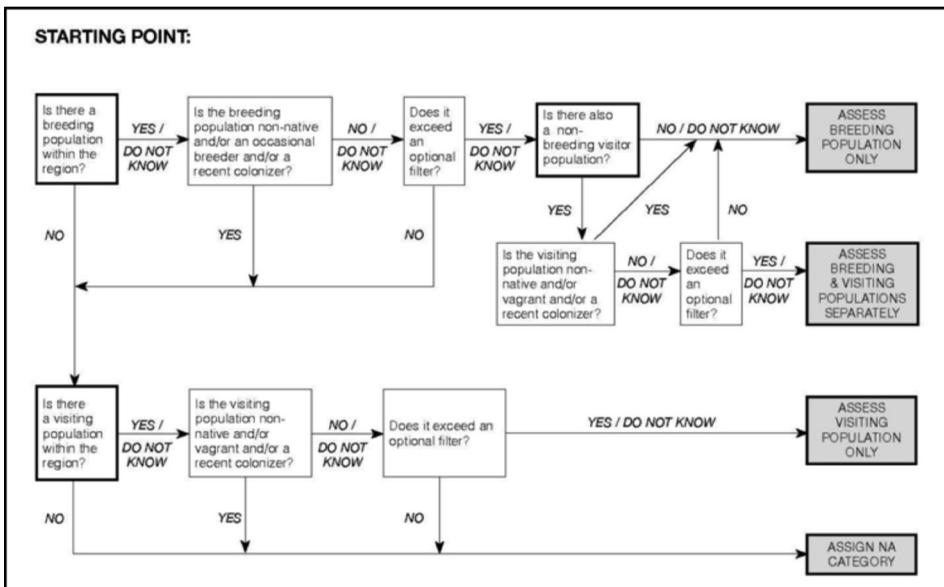
Note: Flowchart taken from IUCN. (2012a). Guidelines for Application of IUCN Red List Criteria at Regional and National Levels: Version 4.0.

Stage 3 and 4: Assessment Workshop and Red List Compilation

Following completion of the provisional assessments, a workshop will be carried out whereby a panel of regional and national experts will go through each species assessment making any relevant changes and corrections before verifying the final Conservation Status. Once this process is complete, the final

[1] IUCN (2013b) IUCN Red List Criteria Summary Sheet: http://www.iucnredlist.org/documents/2001CatsCrit_Summary_EN.pdf

Red List will be compiled into a Red Data List or Red Data Book for public release. In this document, each species account will provide, as far as possible, comprehensive information on taxonomic status, geographical range, population status, habitat preference and ecology, current threats and conservation actions.

DISCUSSION

The benefits of producing a National Red List for the Birds of Malaysia will be wide ranging. As previously outlined, the Red List will be an essential tool in establishing a baseline measure of the status of species, from which the causes of species loss can be identified and conservation priorities can be established, informing the development of National Biodiversity Strategies and Species Action Plans (NBSAPs). Once established, on-going and regular Red List updates will enable the development of Red List indices, highlighting the overall trends in the status of species – a clear indicator by which to measure progress towards halting biodiversity loss as targeted by the 2010 Aichi Biodiversity Targets for the Convention on Biological Diversity (CBD).

The Red List will be a useful tool to aid sustainable development and importantly, it will also be used to help raise awareness of threatened species throughout the country among conservation practitioners, policy makers, government departments and the general public. The data compiled for Red List assessments will also help highlight important gaps in knowledge, whilst the effort of collating biodiversity data into a single national databank will generate a greater awareness and understanding of native species.

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