

MEASURES TO INCREASE WILD BIRD POPULATIONS IN URBAN AREAS IN JAVA

2. MANAGEMENT OF FOOD SUPPLIES AND BIRD PLANTS *

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In a previous paper on management of urban birdlife the role of nest sites was discussed (Van Balen, 1987). Attention will be paid now to what measures could be taken to improve bird habitats in relation to food availability.

The sharing of some food resources often brings birds in conflict with Man. Examples in which birds become pests are, in particular, found where monocultures, such as cereal crops offer birds an abundance of food and the opportunity to increase out of proportion. One goal of wildlife management is to control these numbers, i.e. keeping down to a harmless low level rather than eradicating, which however tends to happen with the large scale use of pesticides (Kalshoven, 1981). The other goal of management is to keep bird numbers well above the dangerously low population levels with high extinction probability. In the urban environment, problems concerning the first aspect of management are rare, as most town dwelling bird species are commensals rather than parasites. In some towns of SE Asia the House Crow (*Corvus splendens*, gagak) can become a nuisance, as do Feral Pigeons (*Columba livia*, merpati) in many large European cities. In contrast, scavengers such as the Brahminy Kite (*Haliastur indus*, elang bondol) and the Jungle Crow (*Corvus macrorhynchos*, gaok), formerly common in the towns of Jakarta and Semarang, where they used to be abundant near slaughter houses (Hoogerwerf & Siccama, 1937 - 1938), have largely disappeared and are hardly found anymore in Java. This may partly be caused by drastically decreased food supplies along with improved sanitation, which already resulted in the decrease of scavenging raptors in other parts of the world (Newton, 1979). The decrease of Java Sparrows (*Padda oryzivora*, gelatik) in Singapore was said to be caused by changed local conditions, in which the supply of spilled grain, food intended for poultry, etc. (on which the sparrows were largely depend on) no longer exists (Ward, 1968); in Java the modern rice mills made rice-hulling more effective and less wasteful, which could have had its effect on the Javan population of the species, which is known to have decreased dramatically during recent years (Van Helvoort, 1981; Van Balen, 1984).

Important food resources, but scarce in urban conditions, are found in more or less natural habitats, e.g. wooded plots. Apart from saving parts of vegetation (parks, unutilized steep river banks, etc.) which will attract a variety of insect, fruit and nectar feeding birds, the choice of trees for lining roads and lanes, bordering lawns, etc. could be more adjusted to birds' preferences rather than merely ornamental and practical

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purposes. Of uttermost importance for obtaining and maintaining an abundant and diverse birdlife is the food supply during the poorest months of the year, which in Java generally takes place towards the end of the dry season (September – October). Research in the New World tropical rainforests revealed the importance of the so called keystone plant resources in times when other food resources are scarce. During this time they support a variety of bird and other animal species which otherwise would have to move to other places or starve to death. In SE Asia least the figs seem to play a role as keystone plant resources (Terborgh, 1986). The selection of a large variety of plant species is therefore important in the design on a town, if a high diversity of wildlife species is desired.

In Table 1 a list is presented of plant species (largely adopted from Sody, 1955), which will attract town birds. For a variety of bird species they may serve as food resources (fruits, insects, nectar), water resources (rain water collected in flowers or through the consumption of juicy fruits), or may in particular be suitable as nesting and/or roosting sites (because of a high unaccessible trunk or a certain 'wildness' by the presence of epiphytes, holes and leaf edges). Therefore their presence in the urban environment could positively influence the number of bird population supported.

Several species have an outstanding general value as bird plants. These are :

1. *Ficus* spp. (kiara, waringin, loa, etc.)

A large number of species occurs in Java, amongst which especially the species *F. benjamina*, *F. variegata* and *F. glaberrima* are known to attract birds. Bartels (1929) contributed a special paper on the figs in Java and their guests. The abundant fruits are eaten by many frugivorous bird species, in particular hornbills and green pigeons *Treron* sp. (punai), which prefer the smaller figs. Raptors sometimes prey on these fruit-eating pigeons, while the many insects that live around the trees (e.g., fig wasps), attract swiftlets *Collocalia* sp. (walet). The aerial roots and often bizarre shape of their canopy offer good nesting and resting sites for other bird groups (owls, falcons, munias, weaver-birds, etc.).

2. *Erythrina variegata* (dadap)

On this tree the flowers are highly attractive to birds as they offer large quantities of nectar. Especially parrakeets (*Psittacula alexandri*, betet), hanging parrots (*Loriculus pusillus*, serindit), starlings (Sturnidae, jalak) and sunbirds (Nectarinidae, sesap madu) are commonly found on flowering trees.

3. *Gossampinus heptaphylla* (dangdeur, randu alas)

Many birds are attracted to the red flowers of this tree and Spennemann (1932) observed, apart from the species mentioned under the dadap, species such as barbets (Capitonidae, ungu-ungku, etc.) and drongos (Dicruridae, srigunting) are among the visitors of this bird tree.

4. *Arrenga pinnata* (aren, kawung)

The sugar palm is extremely suitable to make nests in, and Sody (1955) mentioned 20 bird species (notably four species of owl) of which nests have been found on these palms. Though the presence of a hairy trunk overgrown with epiphytes offers apparently many suitable sites to nest, most species prefer the holes, hollow trunks, leaf pits, and hollow fruit- and leaf-stems. Furthermore the fibers are very much wanted by birds for furnishing their nests with.

5. *Bamboo* spp. (bambu)

Nesting colonies of pond herons (*Ardeola speciosa*, blekok) and weavers (*Ploceus* sp., manyar) have been found on bamboos. Other species that have been found nesting on the stems, among leaves and in hollow trunks, include birds such as scops-owls *Otus bakkamoena*, celepuk), blue flycatchers (*Cyornis banyumas*, burung cacing), fantails (*Rhipidura javanica*, sikatan), whistler (*Pachycephala cinerea*, kepala tebal bakau) and the bamboo specialist the warbler (*Abroscopus superciliaris*, perenjak kuning). A number of birds also utilizes bamboo as a food resource, amongst which the bamboo finches (*Erythrura* spp.) deserve special mentioning.

The presented list in Table 1 is far from exhaustive and many more plants could be added (e.g., Sody, 1955 mentioned more than 70 species of nectar producing plants on which, in Java, nectar drinking by birds has been observed). Moreover, the listed species differ greatly in attractiveness to birds, and more study on their interactions with birds is needed. The seasonality of flowering and fruiting, the frequency of feeding birds and the preferability of trees as nesting sites are topics of which should be thought. In either way, also after their establishment, bird plants offer unique low budget study subjects close to laboratory and campus.

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Table 1. List of plant species which will attract birds in Java (Fr: fruits, seeds; Nc: nectar; In: insects and other arthropods; Wa: water in flowers/fruits; Ns: nesting sites; Ro: roosting site).

Species		Utilization					
Latin name	Local name	Fr	Nc	In	Wa	Ns	Ro
Trees							
<i>Ficus</i> spp.	waringin	x				x	x
<i>Erythrina variegata</i>	dadap		x				
<i>Gossampinus heptaphylla</i>	dangdeur		x				
<i>Spathodea campanulata</i>			x		x		
<i>Muntingia calabura</i>		x			x		
<i>Antidesma bunius/tetrandum</i>	wuni	x					
<i>Flacourtia rukam</i>	rukam	x					
<i>Cordia obliqua</i>	kendal	x					
<i>Trema orientalis/virgatus</i>	anggrung, kurai	x					
<i>Cananga odorata</i>	kenanga	x					
<i>Ziziphus jujuba/aenophila</i>	bidara	x					
<i>Vitex</i> spp.	laban, ketileng	x					
<i>Sesbania grandiflora</i>	turi		x	x			
<i>Albizia</i> spp.	jeungjing			x			
Palms							
<i>Arenga pinnata</i>	aren, kawung					x	
<i>Oreodoxa regia</i>		x				x	x
<i>Livistona rotundifolia</i>	sadang					x*	
<i>Corypha gebanga</i>	gebang	x					x
<i>Actinophloeus macarthurii</i>		x					
<i>Oncosperma filamentosa</i>		x					
<i>Caryota rumphiana</i>							
Bamboo							
<i>Bambusa bambos</i>							
Other bamboo spp.							
Shrubs							
<i>Lantana camara</i>	cente, saliar						
<i>Melastoma malabathricum</i>	harendong						
<i>Leea</i> spp.							
<i>Ehretia microphylla</i>							
<i>Brucea amarissima</i>							

Table 1. (Continued).

Latin name	Species Local name	Utilization					
		Fr	Nc	In	Wa	Ns	Ro
Shrubs (Continued).							
<i>Clerodendron serratum</i>		x					
<i>Laportea stimulans</i>	pulus, kemaduh	x					
<i>Rubus rosaefolium</i>		x					
<i>Sambucus canadensis</i>		x					
<i>Triphasia aurantiola</i>	kingkit	x					
<i>Morus alba</i>		x					
<i>Bridelia lanceolata</i>	kandri, kanjere	x					
<i>Ardisia</i>	ki lampeni	x					
<i>Trichosanthes</i> spp.	kelayar	x					
<i>Bryonopsis laciniosa</i>	kareh kotek	x					
Ferns							
<i>Asplenium</i> spp.							x
Economic (Crop) Plants							
<i>Lansium domesticum</i>	duku	x		x			
<i>Cocos nucifera</i>	kelapa		x	x			x
<i>Areca catechu</i>	pinang						x
<i>Salacca edulis</i>	salak						x
<i>Carica papaya</i>	pepaya	x					
<i>Piper nigrum/aduncum</i>		x					
<i>Capsicum annuum/frutescens</i>	cabe rawit	x					
<i>Curcuma longa</i>	kunyit						x
<i>Saccharum officinarum</i>	tebu						x
<i>Oryza sativa</i>	padi	x					x
<i>Panicum viride</i>		x					
<i>Pennisetum glaucum</i>		x					
<i>Andropogon sorghum</i>	gandrung	x					
<i>Gynandropsis gynandra</i>	mamam	x					

* Especially attractive to the palm swifts *Cypsiurus balasiensis* (walet palem) which attach their nest to the underside of the leaves.