The Nature Society (Singapore)

Conservation Committee

Feedback on the Updated URA Master Plan
(November 2013)

19 December 2013
Nature Society's Feedback on the Updated URA Master Plan (November 2013)

<table>
<thead>
<tr>
<th>Content</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Introduction</td>
<td>1</td>
</tr>
<tr>
<td>B. Need for a Positive Thrust in Our Sustainable Development Efforts</td>
<td>1</td>
</tr>
<tr>
<td>C. Singapore's Greenery</td>
<td>2</td>
</tr>
<tr>
<td>D. Singapore's Strategic Plan for Biodiversity</td>
<td>3</td>
</tr>
<tr>
<td>E. UN Convention on Biological Diversity</td>
<td>4</td>
</tr>
<tr>
<td>F. What Need to be Done?</td>
<td>5</td>
</tr>
<tr>
<td>1. Marine Conservation</td>
<td>5</td>
</tr>
<tr>
<td>2. Freshwater Swamp &amp; Primary Forest</td>
<td>5</td>
</tr>
<tr>
<td>3. Mangrove</td>
<td>5</td>
</tr>
<tr>
<td>4. Secondary Forest</td>
<td>6</td>
</tr>
<tr>
<td>5. The Ecological Importance of the Secondary Forest Patches outside the Nature Reserves</td>
<td>6</td>
</tr>
<tr>
<td>6. Park Connectors/Wildlife Corridors</td>
<td>8</td>
</tr>
<tr>
<td>G. The General Thrust Forward</td>
<td>9</td>
</tr>
<tr>
<td>1. Environmental Impact Assessment (EIA)</td>
<td>9</td>
</tr>
<tr>
<td>2. Roof-top Greenery &amp; Public Parks</td>
<td>9</td>
</tr>
<tr>
<td>3. Development Next to Nature Reserves &amp; Nature Areas</td>
<td>9</td>
</tr>
<tr>
<td>4. Golf Courses</td>
<td>10</td>
</tr>
<tr>
<td>5. Brownfield Areas</td>
<td>10</td>
</tr>
<tr>
<td>6. Natural Areas of Scenic Beauty</td>
<td>10</td>
</tr>
<tr>
<td>H. Recommendations for New Nature Parks (inclusive of Mangroves)</td>
<td>11</td>
</tr>
<tr>
<td>1. Sg. Khatib Bongsu</td>
<td>11</td>
</tr>
<tr>
<td>2. Sg Mandai</td>
<td>12</td>
</tr>
<tr>
<td>3. Bukit Brown Cemetery</td>
<td>13</td>
</tr>
<tr>
<td>4. Lorong Halus Ponds &amp; Surrounds</td>
<td>13</td>
</tr>
<tr>
<td>5. Clementi</td>
<td>14</td>
</tr>
<tr>
<td>6. Bidadari Muslim Cemetery</td>
<td>14</td>
</tr>
<tr>
<td>7. Tengah/Brickland/Bt Batok West</td>
<td>15</td>
</tr>
<tr>
<td>8. Simpang</td>
<td>15</td>
</tr>
<tr>
<td>9. Springleaf</td>
<td>16</td>
</tr>
<tr>
<td>10. Maju Camp</td>
<td>16</td>
</tr>
<tr>
<td>11. Sg Ulu Pandan</td>
<td>16</td>
</tr>
<tr>
<td>12. Alexandra</td>
<td>17</td>
</tr>
</tbody>
</table>

References                                                                 | 18   |
Acknowledgements                                                          | 19   |
Appendix: Maps for Some Recommended Areas                                 | 20   |
Nature Society’s Feedback on the Updated URA Master Plan (November 2013)

(This document is endorsed by the Council of the Nature Society (Singapore))

“The Istana grounds are a green refuge for many species of birds and animals. We should preserve and create many such green spaces all over our island, so that in our urban environment we can enjoy the natural flora and fauna of Singapore.” (PM Lee Hsien Loong)

A) Introduction

The updated Master Plan (November 2013) on exhibit at URA Centre is comprehensive and well-thought-out --- in terms of the coverage of the economic, recreational, social and cultural issues and agenda. The opening up of Keppel Harbour (container port) for development is indeed pretty exciting --- opening a tremendous amount of space (about the size of Pulau Ubin) for housing and urban amenities. Also, the prospect of the long-term re-location of the Paya Lebar Airbase (two-third the size of Ubin) as announced in the mass media recently would increase significantly further the spaces for future development. The plan to phase out several golf courses completely (Warren, Orchid, Jurong, Keppel), as well as the recently completed taking over of the KTM open railway land at Tanjong Pagar Station and at Kranji-Woodland area in the north, has put more icing on the cake. These should open up vistas for bold, creative, eco-sensitive designs for future development plans that would make Singapore a global eco-city.

In this light, the issue of land-scarcity should not be regarded as a serious stumbling block or constraint on our imagination for a national development design that would serve the needs of our nation in a more robust and holistic direction, taking also into account more conscientiously our commitment and thrust towards sustainable development to achieve a loveable and liveable Singapore for all.

B) Need for a Positive Thrust in Our Sustainable Development Efforts

Here, in the vision of the Master Plan on display, we see that the thrust towards sustainability tends to be rather one-sided --- in so far as its effort is focus more on curtailing and curbing the impact of our relentless increase in urbanization and industrialization, to ameliorate transportation problems, to reduce air pollution, to compensate in artificial planting for the natural greenery that were overwhelmed by development, etc. This is rather a negative way--- involving more the salvaging rather than the conserving or preserving effort. A more positive thrust towards sustainability should be the way forward. And this should involve the commitment and contribution of every nation to ameliorate and contain as far as possible the glaring relentless surge in natural disasters, eco-system breakdown and biodiversity loss worldwide over the past decades, due to global warming and other environmental breakdown and deterioration due to human agency.
Here, what is most important is the preservation of what is most valuable that is already existing in our environment, our natural assets --- the natural greenery, which is invaluable for preserving not only our remaining biodiversity, but also the eco-system services that it provides (carbon sequestration, flood control, free air-conditioning, landscape pleasantness, etc.), as well as the many outdoor recreational values that comes with its usage and enjoyment (jogging, cycling, nature appreciation, etc.) The fact that almost one-third of Singapore is covered in natural greenery and therefore not a total concrete jungle should be borne in mind in any land-use planning here (more on this below.)

The need for a focus on our remaining natural greenery and its preservation is moreover pertinent given the findings of the 2013 Institute of Policy Studies’ survey on people preference for green spaces as opposed to infrastructure development, carried out under the auspices of the government committee for Our Singapore Conversation (ST, 2013a). The survey reveals that 60 % of Singaporeans prefer more green spaces over against 19 % that prefers more infrastructural development, with the rest neutral. The term “green spaces” may be broad, but the spate of protests or petitions over the last 10 years organized by residents in various housing estates, such as Sg Ulu Pandan, Zehnder Road, Dairy Farm, Pasir Ris, Punggol, Tanah Merah, etc., against the planned development of their neighbouring patches of forest indicate a growing appreciation for the natural greenery among the general population of Singapore. These are not die-hard greenies, like most members of the green NGOs. These show that people are becoming so uncomfortable at the ongoing eradication of natural greenery around them that they are roused from their comfort zone to take action.

C) Singapore’s Greenery

Here, it is also pertinent to take into account the 2011 collaborative satellite study done by a research team from NUS and CRISP, which shows among other things that 29 % of Singapore is covered in “spontaneous “ greenery (Yee at al, 2011)), which in the study includes such greenery as forests, both primary and secondary, mangroves, marshes, scrubland, etc., but excludes the “managed greenery“ that comes with the public parks, golf courses, football fields, etc. “Spontaneous” greenery is what we would regard as natural greenery in the sense of being generally wild or unmanaged. 29 % is almost one-third of Singapore and this is pretty impressive for a global city, and we should be proud of it to showcase this “spontaneous” or natural greenery to the world ---- instead of ignoring or forgetting that it exists on a significant scale and inadvertently causing it all to be wiped out for development.

It would be enlightening and helpful in understanding Singapore ecological reality to have the breakdown of this 29 % natural greenery here:

<table>
<thead>
<tr>
<th>Breakdown of the Natural/ “Spontaneous” Green Area (29%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Secondary Forest ------------------------------------- 21 %</td>
</tr>
<tr>
<td>b) Scrubland ------------------------------------------- 6 %</td>
</tr>
<tr>
<td>c) Mangrove -------------------------------------------- 0.9 %</td>
</tr>
<tr>
<td>d) Freshwater Swamp Forest ------------------------------- 0.4 %</td>
</tr>
<tr>
<td>e) Primary forest --------------------------------------- 0.2 %</td>
</tr>
<tr>
<td>c) Freshwater Marshland --------------------------------- 0.1 %</td>
</tr>
</tbody>
</table>
D) Singapore’s Strategic Plan for Biodiversity

What is grossly deficient in the Master Plan is that only 4.4% (3,350 ha, ref. URA e-mail, 16 December 2013) of the 29% “spontaneous”/natural greenery are truly or permanently protected as our Nature Reserves (Labrador, Sungei Buloh, Bukit Timah & Central Catchment) --- i.e. minus the four Central Catchment reservoirs (about 700 ha) and given Singapore total land area as 76,600 ha by 2030 (MND, 2013). Most of the remaining natural greenery outside the military zone, as far as the Master Plan goes, will be overwhelmed or drastically curtailed by housing development planned up to 2030 or converted into the manicured public parks, probably leaving only about 4% intact under “Other” (MND, 2013). Those within the military zone will be left for military use or reserve for long-term development beyond 2030.

The updated URA Plan for public parks have shown an increase in numbers and area size, coming to about 5% of Singapore’s total land area. Public parks, like the East Coast Park, the Bishan-Ang Mo Kio Park, the West Coast Park, etc., are mainly created for human recreation and uses, and as such should not be areas that are designated like the nature reserves mainly for biodiversity conservation. Some parks are called nature parks (here you have Bt Batok, Kranji Marshes, Dairy Farm) but to what extent they are permanent in the sense of not being subjected to development in the future is not guaranteed nor clear. What is most puzzling is that Pulau Ubin is designated as “Open Space” land on par with the military areas and nature reserves, although managed like a public park by National Parks. The area managed by National Parks should be declared a nature reserve or a nature park primarily for the conservation of its very rich biodiversity and the plan for land reclamation at the Chek Jawa coastline as shown in the updated Master Plan be completely abandoned.

Most of the so-called Singapore Green Plan’s (SGP) “Nature Areas” are not ‘stand-alone’ areas like the Kranji Marshes Park or the new Gemala nature area at the Kranji Reservoir. Some are located within public parks like Mt Faber, Telok Blangah Hill Park, etc., or are in areas designated for “Sports & Recreation” like Mt Serapong & Mt Imbiah, or within the military zone like Western Catchment or Pulau Tekong. What are their specific area-sizes and boundaries within the context of the public parks? What is the total area and the total percentage of land designated as “Nature Areas”? Also, are there clear-cut or officially laid-down lines of demarcation in terms of usage or management between the conventional park portions and the so-called “Nature Areas” within these parks? We have no clue here. Be this what it may, they cannot be regarded as any form of a serious commitment to biodiversity conservation, given that a “Nature Area” is defined or regarded officially as an area recognized as rich in its biodiversity but only to be left as it is as long as there is no need for its development (SGP 1993 & 2012).

It is instructive to look at what happened to the Mandai Mangrove, Khatib Bongsu, Pulau Semakau and the four Coral Zones, designated as “Nature Areas” in the original 1993 SGP, but deleted as such in the 2012 revised SGP. Also, at the recreational development carried out at Mt Imbiah and now the plan to reclaim the Chek Jawa shoreline in Ubin, another “Nature Area”. All these without any proper consultation with the stakeholders of the SGP. Given this situation,
“Nature Areas” should be left out completely from the calculation of the total area committed seriously to biodiversity conservation in Singapore, which to be realistic covers only the four Nature Reserves --- unless their status are upgraded into “Nature Reserve” or “Nature Parks” with a stronger or permanent protection status.

Given this perspective, i.e., with the exclusion of the public parks and the so-called “Nature Areas” in the SGP, we have only 4.4% of Singapore’s total land area (76,600 ha) committed seriously to biodiversity conservation. This we regard as a more accurate picture of the effort for biodiversity conservation in Singapore. This is embarrassingly negligible for a nation that has declared itself to the world to be thrusting vigorously towards sustainable development.

E) UN Convention on Biological Diversity

Singapore had ratified and therefore committed itself to the UN Convention on Biodiversity in 1995. Although this doesn't involve the total adherence to the Convention’s proposals, a nation that has ratified the Convention should use the relevant benchmarks of the Convention to do its utmost within its capacity to contribute to sustainable development and the amelioration of the global environmental crisis. This entails, among other Convention’s proposals, that it should not fall far behind or be niggardly in its strategic plan for biodiversity.

The latest in the Convention’s Strategic Plan for Biodiversity 2011-2020 (http://www.cbd.int/sp/) is as follows:

"By 2020, at least 17 per cent of terrestrial and inland water areas, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes."

By this yardstick, Singapore falls short for terrestrial areas by about 12.6% if we take in just the nature reserves (4.4%) --- i.e. minus all the public parks & the “Nature Areas” in the SGP. This amounts to about only 26% of the Convention’s benchmark, a shocking niggardly contribution. Even if to be very liberal, we include the 20 designated “Nature Areas”, most of which are located in smaller plots within public parks and recreational areas, we will hardly make it to the half-way mark. (We are unable to get the total figure for this from URA, but believe it to be on a very rough estimate only at most 1.5% more to be added to the figure for the Nature Reserves).

We are not saying that that we should go all out to reach the 17% proposed by the Convention, but definitely much more can be done on Singapore’s part --- given the remaining natural greenery, many of which are rich in biodiversity or have important ecological function in the overall promotion of biodiversity in Singapore.

For coastal & marine areas, we falls short by 9-plus % of the Convention’s proposed benchmark of 10%.
F) What Need to be Done?

1. Marine Conservation

a) For marine conservation, we must say that things are pretty deplorable. The situation of the coral eco-system and our proposals have been given in our Feedback on The Singapore Green Plan 2012 to the relevant authorities (NSS, 2002). Here we would like to re-iterate:


c) That the four coral zones should be restored as “Nature Areas”, as given in the original Green Plan (1993). To date only one coral zone has been designated as such: the Sisters Islands.

d) That Pulau Hantu be designated Singapore Marine Community Park

2. Freshwater Swamp & Primary Forest

All of the remaining freshwater swamp forests are within the nature reserves.

As to the remaining primary forest, all are in protected areas (Botanic Gardens, Nature Reserves) but unfortunately, the planned Cross Island MRT Line cuts through a patch of it at the MacRitchie Forest of the Central Catchment Nature Reserve (CCNR). We strongly urged that this plan be cancelled (NSS, 2013, refer to NSS Position Paper for the details on the biodiversity & justifications for this.) The whole of our central nature reserves (BTNR & CCNR) is already severely fragmented into no less than 20 forest patches by service roads, golf courses, pipelines, rifle ranges, fences, reservoirs, etc., giving rise to the deleterious edge effects that are established by ecological studies worldwide, such as loss of humidity and cooling, quieter interior space, intrusion of domestic animals and pests, etc. It will become extremely shaky and degraded to serve as a flagship of Singapore’s conservation effort pretty soon --- if development and non-eco-friendly usages like mass marathons continue to impinge on its ecological integrity.

3. Mangrove

Here, it is urgent that we should leave completely untouched the remaining mangrove (0.9 %). Sungei Buloh mangrove is the only patch of the remaining mangroves that is permanently protected, that is, as a Nature (Wetland) Reserve. The rest are in imminent threat of being degraded or wiped out by development plans. It is good to see here the cancellation of the plan to reclaim the large Sg Puaka-SgBesar mangrove in the middle of Pulau Ubin. This should also be applied to the reclamation plan for Chek Jawa and the Sg Mandai Mangrove with their intertidal mudflats. It should be noted that at the time of Raffles’ landing in Singapore (1819), 13 % of Singapore’s territory (along the coats and rivers) was covered with mangrove.
4. Secondary Forest

This constitutes about 21% of the land cover in Singapore. Only about 6% at most has come under the SGP, if we take into account both the Nature Reserves and the “Nature Areas”. Be it noted that the secondary forests within the nature reserves are not second class habitats and surveys have demonstrated that they are extremely important and viable habitat for our native fauna. Their spontaneous development into more mature forest and suitability for many forest-dependent wildlife will be jeopardized critically with development intrusions like the Cross Island MRT Line.

We propose that the SGP percentage be increased to 12% and this to come from secondary forest outside the Nature Reserves --- so as not to be way behind the laudable goal of the Convention’s proposal of 17%. This increase should be set aside for Nature Parks, not the conventional public parks, so as to maintain its viability in the long term and in a permanent way --- as areas for biodiversity conservation as well as for their eco-system services. Obviously, the mature forests have priority. (We have our recommendations, which are listed below.)

5. The Ecological Importance of the Secondary Forest Patches outside the Nature Reserves

The conservation of these patches of forest outside the forested nature reserves would serve the following ecological functions:

a) These patches of forest may not be as rich in plant species as the nature reserves but they serve as extended foraging grounds or new habitats for some forest wildlife from these Nature Reserves, especially those patches that are closed or contiguous with them, such as at Bukit Brown, Tagore, Asrama, Springleaf, etc. For example, forest bird species, such as the Red-crowned Barbet (uncommon), the Black-headed Bulbul (critically endangered), the Red-eyed Bulbul (endangered), etc., from the Central Catchment Nature Reserve have been recorded regularly at Bukit Brown. The Crested Serpent Eagle (critically endangered) has also been recorded in the forest at Springleaf, while the Chestnut-bellied Malkoha (uncommon) has even ranged as far as Khatib Bongsu on the northern coast. A road-kill involving the Banded Leaf Monkey, a forest species, was found along Upper Thomson Road (Andie Ang, NUS, 3 March 2012 comm.), probably trying to reach out from the Peirce Forest to the Tagore forest to forage. The Leaf Monkeys are known to use the Tagore Forest for foraging as well as the State Land between Old Upper Thomson Road and Upper Thomson Road. A Leopard Cat roadkill along Mandai Road is also indicative of this need (Charith Pelpola, photo dated 11 June 2001). At Bukit Brown, the Flying Lemur and the Sunda Pangolin (critically endangered), both forest dependent mammals, had also been recorded (NSS, 2012). The provision of such extended foraging grounds or habitats would enhance the survival of the forest species by increasing its population size when the carrying capacity of the nature reserves from whence they came are exhausted.

b) They serve as steppingstones for wildlife dispersal from the Malay Peninsula and from the Nature Reserves to forest patches and wooded areas
They serve as habitats itself for many resident species of wildlife. Of particular note is that our birds of prey such as the Changeable Hawk Eagle (endangered), the Grey-headed Fish Eagle (critically endangered) & White-bellied Sea Eagle (common) have resorted to these forest patches for their nesting sites. These eagles prefer the Albitia in these forests. The existing known Changeable Hawk Eagle’s nesting sites are at Bt Brown, Dairy Farm forest at Petir Road, Kranji forest at Neo Tie Lane 2, all subjected to impending development. Five known nesting sites of this species --- at Sg Ulu Pandan, Khatib Bongsu, at Pasir Ris Greenbelt, Woodland Road & Jalan Bahar --- were already wiped out by recent developments. Outside the Nature Reserves, the two known sites in use by the Grey-headed Fish Eagle -- at Khatib Bongsu and at Sungei Mandai Kechil, both in Albitia patches, are now threatened by impending development. The plight of the White-bellied Sea Eagle’s nesting sites outside the Nature Reserves, most of them on Albitia trees, is well-covered in the mass media, the most well-known of which is at the Pasir Ris Greenbelt. Given the widespread destruction of the forest patches outside the Nature Reserves, it would not be long when they will be confined to the forested Nature Reserves, reducing the population to these wildlife fortresses. With their limited carrying capacity, this will be an extremely non-viable situation for these birds of prey that require large territories for their breeding. The Spotted Wood Owl (critically endangered) and the Greater Coucal (uncommon) are also prominent examples of forest birds that have been doing well in such patches. Other important wildlife, such as the new butterfly species for Singapore, Banded Line Blue (Prosotasa lutea sivoka) (ST, 2012), as well as the Golden Royal (Pseudotajuria donatana donatana), a critically endangered butterfly, (Anuj Jain, NUS, personal comm.) have been recorded at Bukit Brown.

d) They serve as winter havens for many dryland migratory birds. A well-known case of this is Bidadari, a small patch of woodland, where 59 migratory species had been recorded, including the globally threatened Japanese Paradise Flycatcher and the Brown-chested Jungle Flycatcher. Migratory raptors (e.g. the Black Baza), flycatchers (e.g. the Dark-sided), Cuckoos (e.g. Hodgson’s Hawk, Chestnut-winged), Drongos (Crow-billed, Asian Drongo-cuckoo), Pittas (Blue-winged, Hooded), Kingfishers (Ruddy, Black-backed) are found to resort to these forest patches for food and rest on the way to destinations further south (NSS, 2012b)
6) Park Connectors/Wildlife Corridors

The plan to form what is called “park connectors” all over the island to connect the parks with one another and to the Nature Reserves is laudable, the most prominent of which is the plan to connect the Western Catchment to the central Nature Reserves, via the secondary forest at Tengah and Brickland. The Railway Corridor should also be designated as a park connector and enhanced as a wildlife corridor by preserving and/or restoring as much of the forest patches, such as at Clementi, Alexandra, Maju Camp, etc. (more on these areas below), that are contiguous to it --- both on the main and the Jurong line (http://nss.org.sg/documents/TheGreenCorridor101103.pdf.)

For such connectors to be useful for wildlife dispersal, i.e., to really serve as wildlife corridors as well, we have to bear in mind the following requirements:

a) The wildlife corridor would need to be sufficiently wide to hold a critical biomass of trees and shrubs, which at the least should be about 50 metres wide. There is a need to do some ecological studies to determine what might be the wildlife customers as well as the optimum size – we need to know exactly which native as well as feral animals will be likely to use the connector because there is a risk that feral species could also be transmitted into the Nature Reserves by this mechanism. We need to find out what species are in the terminal locations as well as along the way first and determine if some wildlife management actions might be required in addition to constructing the connector.

b) It would be good if the connector could include some water features such as streams, ponds, etc., that may already exist along the way.

c) It will be important to plant this highway with native species, and here secondary forest tree species should be considered for this purpose as a first wave of planting. Secondary forest species or pioneer species are typically fast growing and regularly produce fruits that are edible by the native wildlife. Examples of these are the Litsea species (Litsea firma, Litsea elliptica, Litsea grandis), which can also grow quite high giving an opportunity for the arboreal gliding mammals to utilize the green highway. Fig species (e.g. Ficus variagata, Ficus fistulata) are also very appropriate, being cornerstone forest species that grow reasonably quickly and provide all year round food, covering the food supply problem when seasonal fruiting trees are not fruiting. And also Macaranga species (Macaranga buncana, Macaranga gigantean, etc.), which are reasonably tall, providing reliable seasonal food. These are just some suggestions.

d) There is also an opportunity to insert rare native species of tree and shrub as the green belt is established --- a conservation opportunity to establish a seed bank for rare species of flora. This could be a secondary objective that would maximize the benefit of land use by the connector.

e) We would need to seriously consider limiting human entry into this connector for the same reason that human entry to the eco-link is restricted. Presence of humans along with noise, litter and “simply being there” will limit the effectiveness of the connectors as wildlife corridors.
G) The General Thrust Forward

1. Environmental Impact Assessment (EIA)

We here urged that mandatory Environmental Impact Assessment be conducted if there is any development plan for any naturally green area of 10 hectares and above, be they marshes or mangrove or forest or scrubland. For a smaller area, 10-19 hectares, the EIA can be just for the biodiversity impact, but for the larger area, 20 hectares & above, this must also include assessing the impacts on the cultural, recreational, economic and other environmental assets or values (clean air, clean water, etc.) The area-size limit given takes into consideration the smallness of Singapore compared to say Malaysia, which has a mandatory EIA for any area 50 hectares and above that is projected for development (Marzuki, 2009). Neighbouring residents and other stakeholders must be consulted. The assessment must be made before the plan is finalized and put out for tender. On completion of the assessment, the results in its entirety should be made available to the public when requested.

2. Roof-top Greenery & Public Parks: The Master Plan puts a great deal on the greening of Singapore by carrying costly projects, like roof-top greenery, creating of public parks from scratch (e.g. Gardens by the Bay), etc. The exhibition at URA Centre has emphasized this by putting up a panel showing that the top of highrise can replace by 100 % the green cover on the ground. We are not against the roof-top greenery project. It is laudable, but the panel has projected a blatantly misleading picture to the public. Of course, if the ground is concrete or bare or badly degraded greenery, there could even be more than a 100 % replacement, but if we are dealing with a natural ground cover that is largely intact, this is a completely different story, i.e., if we take into account the whole eco-system that exists in the affected area. Roof-top greenery has also its safety and fire-hazard constraints such that you simply cannot plant say all the many existing tall trees that have been destroyed in the area to be developed.

Creating more public parks is also laudable, but we are already having too many of these. The emphasis now into the future should be to have more Nature Parks (like the Kranji Marshes Park), with these mainly focused on the preservation of its biodiversity but made accessible to the public for eco-friendly uses. (Refer to our recommendations below). A great emphasis in the Master Plan is to bring nature closer to all Singaporeans, but this is better achieved by having more Nature Parks, where the natural vegetation is carefully preserved. Here, a lesson can be learnt from the recent NUS study comparing the level of wildlife richness for public parks and nature parks or natural areas. This study shows, in terms of birds and butterflies, that nature parks or natural areas have a more variegated array of wildlife and hence, cultivated greenery is not a good substitute for natural greenery (ST, 2013b)

3. Development Next to Nature Reserves & Nature Parks/ Areas

Urban and commercial developments that adjoin Nature Reserves and Nature Parks/ Areas should be required to implement designs that allow the development to blend in with the adjoining habitats. The condominium developments next to Bukit Timah Nature Reserve are examples of how not to undertake such development because of abrupt vertical walls due to site excavation along the shared boundary. Developments should be required to plant a line of buffer trees such as *Syzygium oleana*, which may be cultivated to form a dense hedge along shared boundary. This would help in sealing in the micro-habitat off the forested areas, and act as a screen against light, sound and smell pollution emanating from the urban development. This
type of hedge would also contribute to controlling the monkey problem now prevalent in Singapore – the branches of this species will not support a monkey’s weight and the sight barrier will help to discourage monkeys from trespassing the adjoining living areas. Plot ratios should be adjusted for less dense living areas when developments are adjoining nature areas in general.

4. Golf Courses: It is laudable that in the Master Plan, several existing golf courses -- the Keppel, the Warren, the Jurong & the Orchid Country Club --- will be completely degazetted when their leases expire. To date, there are 18 country clubs with golf courses using up a total of at least 1500 hectares of land (ST, 2013c), but serving only about 2% of our population from age 15 and above (SSC, 2005.) This is a glaring anomaly in land usage and should be rectified by taking them out further for housing development instead of our precious natural greenery, which benefit everyone in Singapore in terms of a far, far wider spectrum of needs and values, (recreational, aesthetic, psychological, spiritual) as well as providing invaluable eco-system services (especially in regard to forests and mangroves.)

5. Brownfield Areas: Instead of eating up what is left of the natural greenery, the main arena for development should be brownfield sites. The plan to re-locate Keppel harbour with its vast container terminal to the Tuas reclaimed land for a southern urban front is also laudable. So too is the plan to re-locate the Paya Lebar Airport to the Changi reclaimed land. As these are long-term plans (15 – 30 years), it is best that other but smaller brownfield areas such as the disused Turf Club at Dunearn Road and the Tanjong Pagar railway land be used to accommodate mass-market housing. Also, revamping of old industrial and housing estates for a more intensified usage and design should be increased further. In this regard, we also urge that the building of HDB flats and mass-market condominiums should be slowed down considerably so that there is no need to fall back on “tapering” measures to cope with falling demand, which is what is happening now with over-supply. The cost with over-building due to speculation and investment demand from abroad is the increasing loss of our natural greenery and the expansion of the concrete with all its detrimental ecological effects. While the buildings stand empty, the lost natural greenery and its biodiversity will either be impossible to recover or it will take a long, long time, decades, or centuries.

6. Natural Areas of Scenic Beauty

We propose that there should be another land classification, which we here labelled as ‘Natural Areas of Scenic Beauty’. This classification would be somewhat analogous to the UK’s ‘Area of Outstanding Natural Beauty’ (refer to www.landscapesforlife.org.uk). For Singapore, a very small nation, these areas do not have to be on a scale and quality that you would see in the UK or other counties with spectacular natural landscapes. There are many remaining naturally green areas that may not qualify for inclusion as nature parks or nature areas for reason that they are not so rich in wildlife, but may be still worth preserving for their value in lending beauty to and softening up the landscape around, especially in the urban and suburban zones, where the concrete is predominant. Planted roadside trees and shrubs or the orderly and sparse scattering of trees in public parks do not have the same pleasant impact on the eyes as naturally green areas, such as patches of forests on hills, along roads and MRT lines or rivers and canals or shores of ponds and lakes. For commuters along the MRT lines or roads, they soothe the nerves of weary office worker in their journey to and from work. Good examples of such scenic natural areas are the Pasir Ris Greenbelt, the Punggol Forest at Punggol Ave 17, the forest at the Tanah Merah MRT Station, the Albizia forest at Dairy Farm/Petir Road --- all of
which are very much in the news in the last few years due to people’s wanting to protect their pleasant and lovely presence as well as other values that they have imbibed from them.

H) Recommendations for New Nature Parks (inclusive of Mangroves)

Recently, URA has announced that there will be 20 new parks being planned within the next 5 years. One of these sites had already being selected ---- at Pulau Serangoon (Coney Island). Below is our recommendations for new areas to be designated --- rather as Nature Parks, based on their biodiversity richness and ecological contribution to enhancing the overall viability of Singapore’s biodiversity. More areas are forthcoming as we are continuing to study and monitor many other areas of natural greenery.

1. Sg. Khatib Bongsu (Mangrove & Secondary Forest)
(See Appendix for site location on map)

It is marked as a ‘Reserve’ area in the updated URA Master Plan. Nature Society had submitted a conservation proposal for the whole area to URA in 1993 (NSS, 1993).

The area is bordered by Sg. Khatib Bongsu, Sg. Seletar Estuary, the Johore Straits and Yishun Avenue 6. The portion near Yishun Ave 6 had been cleared for HDB development. A road called Admiralty Road East is under construction running east-west between this planned HDB housing estate and the boundary of the MINDEF area. A large part of the mangrove along Sg Khatib Bongsu and round the coast eastwards to the Sg Seletar is still intact together with the wooded area within the MINDEF zone.

The general area is also highly scenic and beautiful with a great potential for fishing along the coast, hiking, mountain-biking, etc. A reservoir is planned for the coast here covering the Sg Seletar Estuary, Sg Khatib Bongsu & Sg Simpang. This should not be implemented or if implemented to be restricted to the Sg Seletar Estuary.

The Simpang Development Guide Plan (1993), which also covers this Khatib Bongsu area, has designated a portion of the area centred around the mangrove to be incorporated into the housing plan for the area. This had been confirmed by Mr Lim Hng Kiang (the Minister of MND) in Parliament in 1994: “We have acceded to their request in priorities and we have conserved Sungei Buloh Bird Sanctuary and Khatib Bongsu.” (Singapore Parliament Reports (Hansard) 17th March, 1994)

Present here is the endangered mangrove tree species, *Lumnitzera racemosa*, listed in *The Singapore Red Data Book (RDB)*. Growing plentifully by the edge and on the mangrove is the *Hoya diversifolia*. On the whole the mangrove here is extensive and healthy, with thicker stretches along Sg Khatib Bongsu and the estuary of Sg Seletar.

A total of 185 species of birds, resident and migratory, have been recorded at the Khatib Bongsu area. This comes to 49 % of the total number of bird species in Singapore (376, *NSS Pocket Checklist 2011*, unpublished) – almost comparable
to that at Sungei Buloh Wetland Reserve. 13 bird species recorded here are listed in the RDB and among these are: Rusty-breasted Cuckoo, Straw-headed Bulbul, Ruddy Kingfisher, Grey-headed Fish Eagle, Changeable Hawk Eagle, White-chested Babbler, etc. The Grey-headed Fish Eagle and the Changeable Hawk eagle are recorded nesting in the Albizia woodlands in this area.

The mangrove-dependent species present are: Crab-eating Frog, Dog-faced Water Snake & Malaysian Wood Rat. The Malaysian Wood Rat is regarded is locally uncommon. In 2000, s Banded Krait (an RDB species) was found here near the edge mangrove. Otters, probably the Smooth Otter, have been sighted by fishermen and birdwatchers in the abandoned fish ponds and the Khatib Bongsu river.

2. Sg Mandai (Mangrove & Mudflat)

The whole area is marked for land reclamation and the reclaimed land is put under ‘Reserve’ classification in the updated URA Master Plan.

The mudflats here, which extend all the way to Sg Kranji Estuary, are highly important feeding grounds for migratory shore (like sandpipers, plovers, egrets) and resident wading birds (like herons). 112 bird species, migratory and resident, are recorded, which amounts to 30 % of the total species (376) for Singapore, with 10 listed in the RDB. 34 of the total recorded here are wetland species. The migratory shorebirds from Sg Buloh Wetland Reserve are also dependent on these mudflats for feeding during the low tides. A pair of Grey-headed Fish Eagle (critically endangered) is nesting at the edge of the mangrove at Sg Mandai Kechil on a grove of Albizia trees.

The mudflat at the estuary of Sg Mandai Besar and also at the contiguous mudflat of Sungei Pang Sua are well-known breeding grounds of the Mangrove Horseshoe Crabs (Carcinoscorpius rotundicauda) (Cartwright-Taylor et al, 2009). The Mangrove Horseshoe Crab is listed in the RDB as Vulnerable. In an island-wide survey (2009) of Horseshoe Crabs, this sector of our main coastland has the highest count of the Mangrove Horseshoe Crab population. The Nature Society has been conducting a Horseshoe Crab rescue and study here since 2007. Moulting and mating specimens can be found throughout the year. The tidal mudflat here appears ideal for the Mangrove Horseshoe and most probably is the best habitat area for this species in the whole of Singapore, including the offshore islands.

This patch of mangrove is well-studied by botanists in the past. It is the home to several mangrove tree and associate species that are severely endangered in Singapore, including the trees Sonneratia ovata, Intsia bijuga, and Lumnitiera racemosa (all critically endangered), Heritiera littoralis and Ceriops zippeliana (both endangered), and the mangrove associates Finlaysonia obovata, Merope angulata (both critically endangered) and Brownlowia tersa (endangered) (Friess et al, 2012).

Although a big part of the mangrove here has been largely destroyed, especially the patch along Sg. Mandai Kechil, those at the estuary of Sg. Mandai Besar are somewhat still intact. Most of the stands there are mature trees. However, even at the reclaimed shoreline at Sg Mandai Kechil, the mangrove is making a comeback to form a continuous belt with those at Sg Mandai Besar --- which portends very well of its future recovery if it be given the opportunity.
Given that such an ecosystem is rare in our national territory, being reduced from an original of 13% in the 1820s to less than 1% of the total land area in Singapore, it is worth doing our best to preserve it as a habitat for wetland wildlife, scientific/educational resource, recreational and aesthetic/scenic values. The medical value of the Horseshoe Crab’s blood for anti-septic purpose is famous. The planned URA reclamation project here should be completely disallowed.

3. Bukit Brown Cemetery (Secondary Forest)

Marked as “Cemetery” in the updated URA Master Plan.

This site is already famous given the mass media coverage in recent months. A conservation proposal was submitted to LTA and URA (refer to Ho, 2012, for an updated write-up). The area is planned for housing development in about 30 years time but a part of it will be overwhelmed by the LTA’s project for an expressway to solve the congestion problem at Lornie Road.

We consider this area an important wildlife habitat in its own right apart from its cultural value. There are 94 bird species recorded among which are 15 listed in the RDB. Apart from the many RDB bird species, interesting mammals like the Sunda Pangolin (critically endangered) and the Flying Lemur have been recorded. Most importantly, it also provides a foraging/nesting ground for forest wildlife (especially birds) from the southern MacRitchie section of the CCNR across Lornie Road as well as serving as an important stepping-stone in series of such right up to the Southern Ridges. The scenic and recreational value of this very old cemetery is great. Bukit Brown should be designated as a heritage-cum-nature park.

4. Lorong Halus Ponds & Surrounds (Marshland & Scrubland)
(See Appendix for site location on map)

This area is marked for industrial use in the updated URA Master Plan.

Although this area was a rubbish dump now capped, it has become very green over the years with patches of woodlands emerging. The general area is highly scenic and beautiful with the variegated landscape of grasslands, scrublands and wooded hills created by the capped Landfill. The whole area has a lot of potential as an outdoor recreational park with a natural area component. The area around the Grebe Pond, Sg Blukar and the belt of woodlands around the hill to the west of Sg Blukar should be integrated with the artificial PUB’s Lorong Halus Wetland.

This is one of only two known sites for the breeding of the Little Grebe, a species listed in the RDB as Critically Endangered --- the other being at the Singapore Quarry Lake of the BTNR. The Grebes at the Quarry Lake have not been nesting nor seen for the past few years. This area is well known and much studied for its birdlife. 120 bird species have been recorded, which is about 32% if the total bird recorded in Singapore (376). Apart from the Little Grebe, other RDB species are the Lesser Whistling Duck, Crested Goshawk, the Grey-headed Fish Eagle, Black-crowned Night Heron, etc.
Apart from the birdlife, the area is also rich in butterflies --- where 20 species have been recorded (in 2007 by the Society’s Butterfly Interest Group), 3 of which are uncommon in Singapore, and they are: the Common Tiger, the Grey Pansy and the Silver Forget-Me-Not.

5. Clementi (Secondary forest)
(See Appendix for site location on map)

The area is marked for housing development in the updated URA Master Plan.

The Clementi Forest is bounded roughly by King Albert Park, Clementi Road, Old Holland-Ulu Pandan Road and the main former railway line. It is the most important and largest patch of forest contiguous to the former railway line. The vegetation cover is varied --- remnant Rubber plantations, Albizia groves and other wild plants. It has natural streams and an unchannelled portion of a river flowing through the area, which are important micro-habitats for aquatic and semi-aquatic wildlife.

78 bird species, resident and migratory, are recorded and this amounts to 21% of the total bird species (376) recorded in Singapore. 12 species are listed in the RDB such as the Oriental Pied Hornbill, Violet Cuckoo, Buffy Fish Owl, Asian Drongo-cuckoo, Spotted Wood Owl, Changeable Hawk-eagle, Grey-headed Fish Eagle, Red-legged Crake, Straw-headed Bulbul, etc. A Changeable Hawk-eagle’s nest on an Albizia tree is recorded in the area.

Of the total bird species recorded here, 32 are forest species, amounting to 41% of the total recorded here. In general, this makes it significant as a habitat for the forest birds, and in particular, serving as a haven or foraging ground for typical forest species that are found in the Nature Reserves (BTNR & CCNR), such as the Common Hill Myna (uncommon), Asian Fairy Bluebird (common), Violet Cuckoo (endangered), etc. There are also recorded so far 9 mammals; 11 reptiles, including the Clouded Monitor; 8 amphibians, including the Copper-cheeked and the Malayan Giant Frog, both typical forest species; and 6 freshwater fish species. 48 species of butterflies are also recorded so far, 18 of which are uncommon and 13 are forest-dependent such as the Common Birdwing, (RDB species), Common Rose (RDB species), Blue Nawab and Commander, etc.

The forest has a great potential for luring a greater variety of forest wildlife over time as it becomes more mature, and with ecological enhancement, such as introducing a variety of native forest plants from the Nature Reserves.

It can also be regarded as a ‘Natural Area of Scenic Beauty’ for commuters along Clementi Road and ramblers along the Railway Corridor.

6. Bidadari Muslim Cemetery (Secondary Forest)

The area is marked for HDB housing development in the updated URA Master Plan.

The graves are all exhumed but the luscious trees and vegetation are still standing, attracting many interesting species of birdlife. The area at the exhumed Muslim cemetery is a well-known haunt for many migratory bird species as well.
as bird photographers. There are so far recorded 141 species (resident and migratory), constituting 38% of Singapore's total (376) --- for such a small area (20ha). Apart from the common migrants, the following rare/uncommon migratory species have been sighted regularly: the Hooded Pitta, Orange-headed Thrush, Hodgson's Hawk Cuckoo, Drongo Cuckoo, Large Hawk Cuckoo, Chestnut-winged Cuckoo, Blue-and-White Flycatcher, Dark-sided Flycatcher, Yellow-browed Flycatcher, Grey Nightjar, Malayan Night Heron. Most of these species are also beautiful and photogenic --- hence it has become increasingly popular with nature photographers and nature lovers. There is also a pair of Spotted Wood Owl (RDB species) nesting in and haunting the area. There is a URA plan to create a regional park at the exhumed Muslim cemetery. A conservation proposal was submitted to HDB (NSS, 2012b).

It can also be regarded as a 'Natural Area of Scenic Beauty' for people living in the neighbourhood and moving along Bartley, Serangoon and Upper Upper Aljunied Road.

7. Tengah/ Brickland/Bt Batok West (Secondary forest) (See Appendix for site location on map).

The area is marked for a large HDB housing development called Tengah HDB in the updated URA Master Plan.

It is bordered roughly by Bt Batok Road to the south and south-east, the Kranji Expressway to the north, the PIE to the south-west and the Choa Chu Kang HDB/MRT Line to the east. We propose that the eastern half of the woodland area all the way to the MRT Line be designated a Nature Park. It is also a very scenic area. There are so far recorded 97 bird species with 9 listed in the RDB, such as the Red-wattled Lapwing, Violet Cuckoo, Rusty-breasted Cuckoo, Changeable Hawk-eagle, etc. Apart from these, there are also 12 uncommon bird species, such as the Rufous Woodpecker, Greater Coucal, Rufous-tailed Tailorbird, Abbott’s Babbler, etc. The area is also rich in butterflies, with at least 50 species recorded.

8. Simpang (Mangrove & Scrubland) (See Appendix for site location on map.)

The area is marked as ‘Reserve’ in the updated URA Master Plan.

It is roughly bordered by the Simpang Kiri Canal to the west, Sg. Khatib Bongsu to the east, Johore Straits to the north and Yishun Industrial Park A to the south.

Apart from the mangrove at the unchannelised Sungei Simpang and the many interesting grassland birds species here, there are extensive grassland or scrubland patches abounding in wild orchids. Arundinia graminifolia (Bamboo Orchids) and Spathoglottis plicata are growing wild in extensive profusion in the grassland/scrubland. To say that the area is a ‘sea of orchids’ is not misplaced. Such wonderful and lovely sights are worth preserving but management of the open sunny patches is essential, as these species would not thrive in tree-covered, shady conditions. Also, two rare species of orchids have been discovered here --- Dendrobium lobii (critically endangered), which was thought at one time by local botanists to be extinct in Singapore, and Liparis ferruginea
(also critically endangered). The *Dendrobium lobii* can only be found here. Again these two orchids require an open grassy areas to thrive.

9. Springleaf (Secondary forest)
(See Appendix for site location on map.)

The area is marked as ‘Reserve’ in the updated URA Master Plan.

It is roughly bordered by Yishun Avenue 1 in the north, Seletar Expressway in the south, Lentor Avenue in the east and the Springleaf housing estates to the west. The wooded area to the north of Sg Seletar has been largely cleared and there is a plan to run the north-south expressway across this sector diagonally from Lentor Avenue to Sembawang Road.

The woodland to the south of Sg Seletar, between Lentor Ave and the Springleaf housing estate, is still intact and should be incorporated into the recommended Nature Park together with the belt of woods on both side of Sg Seletar. This is an important stepping stone for wildlife between the CCNR and the parks and wooded areas along the northern coast, east of the causeway. There are regular sightings of the Grey-headed Fish Eagle (critically endangered), Crested Serpent Eagle (critically endangered) and the Changeable Hawk Eagle (endangered) in the Albizia trees here. Also, many other uncommon bird species too, such as the Straw-headed Bulbul (endangered), the Violet Cuckoo (endangered), etc. A park connector has been implemented by PUB along the banks of the river leading from Upper Thomson Road to the Lower Seletar Reservoir.

The general area has high scenic value and the proposed designation ‘Natural Area of Scenic Beauty’ can be also applied to this area too.

10. Maju Camp (Secondary Forest)
(See Appendix for site location on map.)

The area is marked for residential development in the updated URA Master Plan.

This forest, smaller than the Clementi Forest, lies to the western side of Clementi Road abutting the defunct Jurong railway line up to Sunset Way. It is dense, comprising of a remnant Rubber plantation that has gone wild, clumps of Albizias and other plants. It is not well-surveyed. There are 43 species recorded, among which 2 species are in the RDB: the Straw-headed Bulbul (endangered) and the Oriental Magpie Robin (endangered ). 11 of these are species associated with the forest habitats, among which are 3 uncommon species: Greater Coucal, Rufous Woodpecker and the Common Hill Myna. Of note also is the presence of the Grey-rumped Treeswit, a forest species, which is nowadays rather scarce outside the forest Nature Reserves. Surveys need also to be carried out on the butterflies and the other vertebrates. Like the Clementi Forest, it has great potential to develop into a mature forest habitat --- to serve as an extended foraging ground for forest species from the BTNR.

11. Sungei Ulu Pandan (Secondary forest)
(See Appendix for site location on map.)

The area is marked for housing development in the updated URA Master Plan.
The forest area we are concerned with here is bounded by Sg Ulu Pandan, Commonwealth Avenue West and Clementi Road.

Nature Society had submitted a conservation proposal for the area in 2007 to HDB (NSS, 2007). After this, a petition was mounted by the neighbourhood residents and the park-connector users to save the forest. But this failed and a quarter of the area closer to the Buona Vista MRT Station has been developed for the HDB housing units under the SERS scheme to rehouse the to-be-revamped Ghim Moh precinct.

The remaining portion of the forest should be preserved as a green-lung to the housing estates around. Such a green lung also helps to reduce the urban-heat effect --- cooling the ambient air in our very urbanized landscape.

Generally, the remaining forest as a whole is pretty rich in birdlife. A rapid survey of the birds has been carried out and we have a total of 36 species recorded in two morning survey sessions. There are 12 species here that are affiliated to the forest habitat. Among these, 7 are native and resident species, and these are: the Changeable Hawk Eagle (endangered), Banded Woodpecker, Long-tailed Parakeet, Grey-rumped Treeswift, Greater Racket-tailed Drongo, the Dark-necked & the Rufous-tailed Tailorbird (uncommon). The Grey-rumped Treeswift is becoming rather uncommon. A very important biodiversity highlight here is that the forest is the nesting site of a pair of the Changeable Hawk Eagle, an endangered species.

The fact that these forest species can be found in this suburban forest indicates that the forest in our Nature Reserves are too small to hold them and they are here seeking a new ground for their survival. The preservation of such a suburban forest is a form of compensation for what our forest species have lost over the decades due to widespread and relentless destruction of our forest cover.

It can also be regarded as a ‘Natural Area of Scenic Beauty’ for the neighbourhood and people using the park connector along Sg Ulu Pandan.

**12. Alexandra (Secondary forest)**
(See Appendix for site location on map.)

The area is marked for housing development in the updated URA Master Plan.

The Alexandra forest lies on the western flank of the main railway line opposite the Alexandra Hospital and is bordered by the Ayer Rajah Expressway and Portsdown Avenue. The forest is dominated by mature Albizias with dense undergrowth and a scattering of mature Banyan trees. There is a lake in the forest with a marshy fringe, the haunt of many wetland birds. 70 bird species are so far recorded, among which are 8 species listed in the **RDB**, such as the Lesser Whistling Duck, Spotted Wood Owl, Changeable Hawk-eagle, Straw-headed Bulbul, etc. Uncommon forest bird species such as the Rufous Woodpecker, Greater Coucal, Common Hill Myna are also recorded. There are also 8 mammal, 19 reptile and 8 amphibian species recorded so far. Of particular note are the rare Banded Malayan Coral Snake (**RDB** species), the uncommon Striped Kukri
Snake, the Common Palm Civet and the Common Greenback, (an uncommon frog species despite its name). The conservation of this small patch of forest should be linked into an integrated whole with the parkland of the Alexandra Hospital, where the lush vegetation of planted trees and shrubs also harbours many butterflies and is an attractive foraging ground for many species of woodland wildlife. It can also be regarded as an ‘Natural Area of Scenic Beauty’ for not only the commuters at AYE but also for those taking a ramble along the railway corridor.

References


Davison, GWH, Ng, PK & Ho, HC (eds.) (2008), The Singapore Red Data Book: Threatened Plants & Animals of Singapore (2nd edition), Singapore: Nature Society


Marzuki, A (2009), A review on public participation in environmental impact assessment in Malaysia, Theoretical and Empirical Researches in Urban Management, No. 3 (12), (August).


NSS (1993), Conservation Proposal for South Simpang, Nature Society (Singapore). This proposal covers the area between Sg Khatib Bongsu and the Sg Seletar Estuary,


NSS (2007), An Appeal to Save the Woodland at Sg Ulu Pandan Designated for HDB Development, Nature Society, 29th March.


ST (2013a), Majority want slower pace of life, The Straits Times, 26th August

ST (2013b) Natural greenery ‘key to diverse wildlife’, The Straits Times, 27 April 21st.

ST (2013c) Golf courses to make way for growing population, The Straits Times, 31st January.


-----------------------------------------------------------------------------------------------

Acknowledgements:

The Nature Society’s Conservation Committee would like to thank the Bird Group, the Butterfly Interest Group and the Vertebrate Study Group for providing the relevant wildlife information for preparing this feedback report.

Also, thanks to the following Council members for giving comments as well as assisting in the preparation of the text of this report: Anuj Jain, Ho Hua Chew, Leong Kwok Peng, Margie Hall & Tony O’Dempsey.
Appendix: Maps for Some Recommended Areas

Area 1: Sg Khatib Bongsu
Area 4: Lorong Halus Pond & Surrounds
Area 5: Clementi
Area 7: Tengah/Brickland/Bt Batok West
Area 8: Simpang
Area 9: Springleaf
Area 10: Maju Camp
Area 11: Sg Ulu Pandan
Area 12: Alexandra

(See below for the maps of the areas listed above)