

SUSTAINABLE GLOBAL GARDENS ROTARY TROPICAL TREE-PLANTING REPORT 2017-18

INTRODUCTION

This report covers, at the time of writing, the tropical tree-planting activities of some 44 donor Rotary clubs and 12 Tanzanian beneficiary Rotary clubs as well as countless community groups in East Africa. All of these have been working with the UK registered NGO [reg. no 1116243] Sustainable Global Gardens [SGG] during this year when Ian Riseley, the R.I. President, has requested that every Rotarian plant at least one tree.

It is inevitable that a report for 56 clubs will be lengthy, but I anticipate that the majority of readers will be interested only in activities relevant to their particular club. For such readers I suggest that they browse the initial general material, and then refer primarily to their own club's contribution, followed by the concluding section. A spreadsheet summary of what all 56 clubs have achieved can be seen in Appendix A.

There may also be many readers wanting further details which I do not intend to publish here e.g. names & contact details of East African tree-planters. During this year of Ian Riseley's presidency, SGG has met many Rotarians interested in contributing more than tree-planting or intending to continue with tree-planting and other environmental activities. I would be very pleased to hear from such people, and you are invited to contact me via paul_keeley@hotmail.com or sgginfo16@gmail.com. If you are interested in the broader work of SGG, please refer to our website www.sustainableglobalgardens.org.uk, where several other projects are considered.

TREE-PLANTING STRATEGY

SGG has been active with tree-planting projects for several years, especially in Kenya and Tanzania. It is now ten years since we first planted in the Usambaras and on the slopes of Kilimanjaro, but we did not greatly increase our scale of operations until a few years later when some friends in Western Kenya realised that trees can have considerable and diverse benefits for small-scale farmers. We started with "plant some trees to pay for (school) fees", but very soon poor households with limited land wanted more humanitarian benefits from trees, such as fruits, a home source of fuelwood, a possible small income from marginal land etc. By 2014 SGG was helping hundreds of farming households in Busia County, Kenya to change from the traditional maize-and-beans farming to one based more on agroforestry principles. By 2016 SGG had records which established that those farmers had planted more than 32, 000 young trees – so the idea of tree-planting was well and truly established.

A major perceived problem for many of these farmers was the cost of obtaining and buying tree seedlings. Such seedlings were available, and often costing no more than Ksh10/- [or 10 US cents/8 euro cents/7p] for the more popular species such as *Grevillea robusta*, *Maesopsis eminii*, *Markhamia lutea*. Yet in a cash-poor economy that may seem a high price for the enterprising farmer wishing to plant one hundred or more seedlings. Thus, Ian Riseley's challenge to Rotarians to plant trees provided an opportunity where funding for trees might become available to cash-poor farmers. Many rotarians in crowded locations have found that tree-planting can be more complicated than just buying and planting a seedling in the local community. Yet in East Africa there are thousands willing to plant trees on their land – if there can be some assistance with the cost of the seedlings.



This photo [see top left] was taken in 2010 at ARDAP research station near Butula, West Kenya. It is an excellent example of agroforestry where trees are planted in the same plot as cultivated crops. Here *Grevillea robusta* [grown for timber, fuelwood & as a soil improver], *Calliandra* [grown for fodder & bee forage] and bananas are planted. Between these the brassica sukumawiki is being grown on a double-dug raised bed. In 2010 this agroforestry system was seldom seen in Busia County, but such methods are becoming much more common.



The lower photo was taken much more recently in 2015 on Rusinga Island, Lake Victoria. The plot contains an abundance of fruits [e.g. mango, bananas, and pawpaw] for home consumption and for sale to increase the household income. The most common species grown is *Moringa oleifera*, which is well-known for its nutritional and health benefits. The owner of this plot is now looking for businesses wanting to purchase both the leaves and the seed for export purposes. The plot also has stands of *Markhamia lutea*, which is an indigenous species grown for construction, fuelwood and often used, as here, to mark property boundaries. All of the above species are visible in the photo to the left. In between the trees, but not visible here are the cultivated crops e.g. maize, beans, vegetables. It is this type of land use which SGG wishes to promote on small-scale East African farms.

The schedule for tree planting can be conveniently divided into 5 phases as follows:

- Before 12th October 2017 the focus was placed on getting Rotary clubs informed and involved in tree-planting. Following an invitation to act as the District 1030 “tree champion” 15 Rotary clubs were visited and given advice concerning planting in the local community, planting within Northern Britain at larger projects located in Derwentside & Niddersdale, and planting in East Africa. Although virtually all those clubs were intending to plant within their own communities, many also chose to plant overseas under the direction of SGG. We think there are two main reasons for tropical tree-planting being so popular. One was the low cost of seedlings in local African markets where many species cost less than 10p for a non-fruit and an average of £1 for fruits. This low cost factor became particularly significant, because in addition to the Rod Huggins Tree Award, District 1030 organised a separate competition, “the Thousand Tree Challenge”. For several years SGG had advertised using the slogan “plant a tree for 20p”, and planting 1,000 trees for £200 seemed an enticing proposition for some Rotary clubs with limited experience of local tree-planting. A more compelling reason was the ‘humanitarian value’ of tree-planting on small-scale African farms where trees can provide additional income, act as a reserve bank for occasional educational & medical expenses, be a source of better nutrition, the prime source of domestic energy as well as providing environmental benefits;

- From the 12th October until 7th December I was in Kenya & Tanzania. Encouraging community groups in West Kenya to grow more trees was relatively straightforward as these groups had already planted more than 35,000 trees since 2014, and so had sufficient experience to carry out on their own another tree-planting project. Furthermore, the Kenyan government has the enlightened policy of encouraging every farmer to reserve at least 10% of their land for tree-planting. Negotiations in Tanzania were more time-consuming as several of the 12 Rotary clubs visited were new contacts for SGG. Nevertheless, the sight of the constantly shrinking ice cap on Kibo summit proved to be a powerful incentive to plant trees. During this field visit there was one issue settled, which has proved crucial to the success of the overall project. For Newcastle-Gosforth's tree-planting scheme in West Kenya there was sufficient within the budget for households caring for orphans to receive one banana sucker & 4 seedlings for each orphan. This meant that each group of guardians for 50 orphans could expect to receive 200 young trees. When Mukwano group were asked if they wanted Ksh 2,000/- to purchase 200 seedlings, they declined. Instead it was agreed that individual guardians could plant at their own cost, but SGG would count surviving trees the following April and pay guardians at a rate of Ksh20/- per tree. Not surprisingly during the next meeting with SGG in April rather than the original figure of 200 trees a total of 599 were counted! This, of course, meant that an additional £42 was spent on this group, but SGG wishes to promote tree-planting – and I see this pattern of paying **after** work is completed as a factor crucial to tree-planting success.;



This photo [see above left] shows the planting of the first banana at FOCUSA on 19th October. This was the start of Newcastle-Gosforth Rotary's tree-planting project to support the households of 450 orphans &/or vulnerable children in Busia County. The FOCUSA group were the only one of 9 groups to plant during the October-November short rains. Other groups wanted to wait until the main rains of March-April. Most groups declined payment for 200 seedlings in October, but wanted to wait until the following April when SGG could count all trees planted since 1st July 2017. The above right photo shows one of Mary Onyango's Melia azedarach, Mwarobaini nusu seedlings planted within her maize and counted on 25th March. She is a member of Mukwano group, located near Matayos in Busia County.

There is an interim report available from SGG at www.sustainableglobalgardens.org.uk which indicates progress with tree-planting up to December 2017.

- The third stage lasted until 18th March when we started the second phase of fieldwork. During this period a further 14 Rotary clubs were visited, but more important than that was the SGG visit to the Vancouver “Environmental Sustainability and Peace” conference. This did not result in much new fundraising but it proved to be a great opportunity to develop an extensive range of new contacts, especially within the R.I. ESRAG group. SGG anticipates that some of these new North American connections will prove valuable in the future. If there are rotarians wishing to continue working on tree-planting and other environmental issues, SGG would recommend joining the R.I. ESRAG. See www.esrag.org for details.
- Between 18th March and 8th May a second fieldwork was undertaken in Tanzania & Kenya. During this period the emphasis was on monitoring progress, checking that previous agreements had been implemented by East African Rotary clubs and community groups, and when time constraints allowed counting the trees. The first matter of importance was that this period was one when both West Kenya and North-East Tanzania were blessed with exceptionally good rains & ideal conditions for tree-planting. Thus, mistakes and difficulties tended to be of human origin rather than climatic! One difficulty was that some donor clubs waited until April & even later to indicate that they wished to support tropical tree-planting. At the same time some Tanzanian Rotary clubs delayed in implementing agreements made last November. The consequence of this is that SGG needed to shuffle around some of the arrangements, so not every donor club finished up sponsoring the Tanzanian Rotary club allocated before this field visit began. Late commitment & receipts of grants made this second fieldwork much more pressurised, and a consequence of this was that it proved impossible to visit and count all the trees recorded. The policy which SGG followed during this time was to accept tree estimates given by the partner Rotary club, unless there were good reasons for doubting those estimates. Both Mkuu Rombo and Same Rotary estimates have been adjusted for this reason. Where there was no local Rotary club [e.g. Busia, Rusinga] trees were individually counted by SGG. Furthermore, where it proved impossible to visit agreed planting locations [e.g. Mwanza International School where heavy rains delayed planting, Babati Rotary, Mamba Rotary] estimated tree counts were not included. If seedlings were still in the tree nursery at the time of SGG’s visit but were ready to plant out within two weeks, they were counted. This was the case at Hai Rotary. For all of these reasons, it should be understood by donors that these tree counts are conservative estimates.



Sometimes tree counting can be a quick process, especially when there are 2-3 people helping. This was the case in the Lutheran Cathedral grounds at Same [see above left]. However, on many occasions it is an arduous task, especially as many farmers plant vulnerable seedlings in hedges or beneath taller trees where shade provides protection from sun & wind damage. This [see above right] is Alfred Oyiera’s farm, where we counted 76 fruits & 257 seedlings often planted in thick bush as above.

During this fieldwork period 10 community groups were monitored in Busia County and 3 similar groups on Rusinga Island – both located in West Kenya. This was done without any local Rotary contact, so in order to provide adequate verification of tree-planting claims virtually all these trees were laboriously counted at each planting site. In Tanzania 11 Rotary clubs were visited and their tree-planting progress noted – sometimes but not always by tree-counting. Time was insufficient to visit Machame Rotary, where tree counting had been done previously in November. There was also no visit to Babati Rotary, where the main planting will not take place until June, and Mwanza International School, whose plans were delayed with exceptional heavy rains & flooding. A summary of the trees planted since 1st July 2017 is given in Appendix A.



Practical difficulties when counting mean that recorded tree counts should be regarded as estimates. Here [see above left] we are counting trees along the edge of a road near Usa River, planted by the local Mali Hai group. This work should be easy, but it rained throughout the day as we counted. By contrast Evans Odula of Badilisha on Rusinga [see above] encourages indigenous species, many of them thorny acacia, on his home plot – so best to look where you are walking. A common strategy when tree-planting is to put young trees close to & in the shelter of already established trees [see left] When searching in the undergrowth it can often be difficult to find the (new) wood in the trees. Whatever the conditions, it was always a pleasure to spend the day walking with tree-planters discussing their hopes, dreams and tree-planting schemes.

- The fifth and last phase of this project is the reporting of progress and overall evaluation of tropical tree planting as an activity appropriate for both poverty alleviation and environmental improvement. Action during this period includes visiting donor clubs to provide a PowerPoint presentation concerning progress with their particular planting scheme. In the six weeks since my return home, 5 Rotary clubs have received such visits, but our more distant donors in France and North America will have to rely on emailed reports.

TREE PLANTING PROGRESS

This section of the report is based on findings made during the field visit to Kenya and Tanzania from 18th March to 8th May. Many of the tree-planters mentioned below continued planting after the latter date, and we know of thousands of trees not counted in this survey because of lack of time to visit & tree count at all locations concerned. It should be appreciated, therefore, that the tree counts and recordings given below are minimum estimates. The real tree counts for all the tree-planting partners may well be between 10 and 20,000 more than the quoted figures.

As several donors joined this project from March onwards, it proved necessary to divide some clubs donations between two planting groups, while some planters received more than one donation. It also has resulted in some club donations not being allocated to the partner club originally given in the December 2017 and March 2018 interim reports.

A final matter to remember when reading this section is that there were 44 donors but only 14 planting locations. Thus, to simplify matters, planting progress is reported on the basis of planting location rather than with reference to individual donations.

The first location to commence tree-planting was **Busia County in West Kenya**. This was not surprising as SGG had worked for the previous four years with approximately 400 farmers, who were living mainly around Butula, Matayos and Nambale, and who had planted more than 32,000 trees in that time. These farmers are accustomed to planting seedlings, often at the own initiative and cost, but then receiving a small remuneration for their efforts.



Gladys Ochieng had already planted 600 *Grevillea robusta* & 20 bananas in a previous project, so planting more bananas was not a difficulty [see above left]. Similarly Mohamed Wandera of Matayos has been developing a banana-fruits orchard for the last 4 years [see above] so planting a further 20 fruits for this project was an obvious choice. The first banana for Newcastle-Gosforth Rotary planting project was at FOCUSA school where Rotarian Paul is showing pupils at the school how to plant banana suckers [see lower left]. This photo was taken in October 2017.

The **Newcastle-Gosforth** Rotary scheme was to provide approximately 400 orphans & vulnerable children [OVCs] living within a ‘home-based’ care system with one banana sucker each. This banana sucker was to provide increased food security and a potential small income to the guardian household. These OVCs were to be found in 9 community groups whose members are responsible for the care of these children. When discussing this Newcastle-Gosforth scheme with the guardians, two out of the nine groups indicated that they were concerned about accepting bananas because of the unreliable rains & lack of banana growing in their locality. Savings thereby made enabled the scheme to provide four other seedlings to each OVC-caring guardian in all nine groups. This meant that the anticipated tree count for these groups would total 350 bananas and 1800 young trees. In October the Rotary funding for planting was available for all nine community groups, but most of them did not want to be given funds to buy seedlings. They preferred to plant at their own cost but receive a bonus when those trees were counted in March 2018. The agreed bonus was Ksh20/- for a non-fruit, and K50/- for fruits.

When these young trees were counted in March to May period, there were many more seedlings than might have been expected. Although time was insufficient to count trees on all of the hundreds of farms within this scheme, the tree count for this scheme reached 3629 by early May. All of that total received sponsorship funding from contingency funds provided by Sustainable Global Gardens as well as the Newcastle-Gosforth donation.

At the same time there were donor Rotary clubs without a planting partner who could utilise all the donation. For this reason some of Berwick Rotary’s donation was used to sponsor trees planted by the OVC-caring group at Siguli. Thus, **Berwick** Rotary were allocated 490 trees which could have been allocated to Newcastle-Gosforth. Also **Leith** Rotary were allocated 703 trees planted in the locality of the Siritanyi OVC group.



This is the home of Dolphina Odonga, [see above left] who is a member of Siguli Self-Help Group. She is old, a widow with limited help, living on a farm with some rocky outcrops & infertile soil. [see the granite outcrop in the foreground of the left photo] However, she has more land than she needs to grow sufficient food for the household so she has used much of her land to grow trees. This Rotary year she has planted 37 mangos, 1 avocado and 283 non-fruits – mainly eucalyptus & Markhamia. Here [see above right] she has planted a line of Markhamia lutea on the left and a plantation of eucalyptus on the right. Markhamia is an indigenous hardwood often used as a field boundary and for construction, whereas eucalyptus is usually grown for commercial sales.

Furthermore, there were other community groups interested in tree-planting but not specifically concerned with caring for OVCs. At the same time SGG had received funding from donor clubs who still had no partner planting group by late April. Thus, a tree count was undertaken at Nyusa Farmers on 28th and 30th April, and their 1745 trees were allocated to the Rotary clubs of **Haverhill, Derby South** and **Durham Elvet**. Of these 1745 young trees, Haverhill were allocated 150, Derby South 300 and Durham Elvet 1295.



Humphrey Awuori [see above left] stands next to a Markhamia fence along boundary of his farm. Like many such fences it is a mixture of trees planted in a previous project and new Rotary planting. Many farmers plant new seedlings within their maize as the ground there is already cultivated & the maize provides shade. This was the case [see above right] on the farm of Bonface Owuor, who is a member of Nyusa Farmers. During the last three years Rotarian Paul has noticed an increased interest among local farmers in growing fruits. Here [see below left] Crispinus Omuse of Teso Tree-Planters Association is establishing a commercial orchard, growing mainly jackfruit and pawpaw. During the monitoring visit many of the fruits were still in the nursery, but by early May more than 2,000 fruits were in the ground. This is an individual enterprise, which received only a small donation from a member of Calgary Rotary Club, but which is worthy of further sponsorship. What many farmers around Busia wish to possess is an orchard like this [see below right], planted four years ago by Mohamed Wandera in Matayos.



Thus, 374 bananas, 1992 other fruits and 5664 non-fruits for an aggregate total of 8,030 were planted within this Rotary scheme around Busia. Although Newcastle-Gosforth Rotary provided the core of the funding, there were significant donations from Durham Elvet, Leith, Derby South, Haverhill and **Calgary** Rotary clubs.

As this project had Rotary donors without tree-planting partners in March, a brief visit was made 30th March to 1st April to **Rusinga**, which is the second tree-planting location. Here 3 different groups were visited and trees planted since 1st July 2017 counted. The first visit was made to Bernard Ogolla and his family who wish to establish Moringa oleifera as a commercial crop on their farm. Here 489 Moringa were counted. A second set of visits was made to the farms of members of RIOFA, Rusinga Island Organic Farmers Association. The aim of this group is to develop permaculture methods [e.g. channelling of surface runoff water around plot, water retention ditches, interplanting, and agroforestry with a variety of trees, fruits and vegetables]. RIOFA has also focussed on Moringa production. For this group 791 trees were counted. The third group was Badilisha, another NGO promoting permacultural principles. SGG visited the demonstration plot for Badilisha and the home plot of Evans Oduli, the Director of Badilisha. As the tree count for Badilisha was 586 trees, the total tree count for Rusinga Island was 1872. This figure could easily have been much higher because Badilisha planned to plant as many as 2,000 seedlings at a local school later in April, but SGG did not have sufficient time to return to Rusinga to confirm this later planting. The 1872 counted trees were sponsored by the Rotary clubs of **Crook** and **Teesside West**.



New developments on Rusinga include Moringa oleifera interplanted with maize by the Ogolla brothers [see left]. Nancy Onege is a member of RIOFA and has been growing Moringa on her small plot for a few years. Although she has more than 500 Moringa planted before last July, Nancy has planted 42 fruits and 118 other seedlings this rotary year. Much of the photo [see lower left] shows Moringa trees, but bananas, pawpaw & Markhamia trees are also visible, while vegetable crops are growing beneath the Moringa. Badilisha demonstration plot [see below] is another example of agroforestry combined with intensive cultivation of vegetables. In this photo pawpaw, mango, Markhamia and Moringa trees can be seen providing shade and more humid growing conditions for the underlying vegetables.



Many of the donor Rotary clubs specifically asked for trees to be planted in Tanzania, often in Kilimanjaro Region. Thus, the remainder of this progress report focusses on the 12 Tanzanian Rotary clubs who are tree-planting in this area.

The third partnership under consideration is **Arusha** Rotary Club, who received donations from Cannock and Consett clubs. Arusha are one of the older and larger of the Tanzanian clubs, so there was no doubt that they would be able to plant the 200 fruits sponsored by **Cannock** and the 1000 trees sponsored by **Consett** Rotary. At a meeting on 4th April Adolf Olomi, the tree coordinator for Arusha Rotary, confirmed that they had already planted some 3,492 trees. One of the local planters associated with Arusha is Tumaini Farm between Tengeru and Usa River. An SGG monitoring visit on 7th April confirmed that 93 fruits, 464 banana stems and 83 non-fruits had been planted since July 2017.



There are many reasons for institutions deciding to plant trees. Within the grounds of Suye School there is a small copse where the school are trying to recreate an area of indigenous woodland which can be used as an educational resource by the 1050 students there. Many of the seedlings found here are wildings or acacia species. [see above left]. Tumaini Farm wish to create a large orchard with a variety of fruits e.g. banana, mango, avocado. Much of the fruit will be consumed by students in the boarding school next to Tumaini Farm [see above right]. Many other schools plant fast-growing species [e.g. *Grevillea robusta*] to provide timber for fuelwood & construction.

Another well-established club is **Moshi** Rotary, who received several donations for tree-planting. Some of the leading rotarians in this club believe that it is best to concentrate on fruit trees. Not only do they increase food security and better nutrition for young children, they generally have a significantly higher survival rate than non-fruit species. Thus, it is not surprising that Moshi Club have planted 1045 fruits, mainly avocado, this year. This particular viewpoint of the Moshi rotarians has meant that the donations of **Methyr Tydfil, Sarlat, Bergerac and Riberac** Rotary clubs have all been used to purchase fruits. Another unusual feature of Moshi Club is that they have established an Interact Club at Moshi Primary – one of the local schools they try to support. The Interact Club of 50 pupils is active in the school garden and also the school tree nursery –both of which are income-generation projects for the school. Just before the SGG monitoring visit, Moshi Primary sold 1,000 seedlings which were to be planted in the grounds of Soweto School, which is also located within the Moshi urban area. SGG has contact with several schools around Kilimanjaro who establish a tree-nursery for educational purposes and to provide seedlings to improve the school grounds, but who later expand the nursery so they can sell and thereby increase their limited income. The Rotary Club of **Saltburn** have paid for the 1,000 seedlings as well as some of the fruit produced by Moshi Primary and their Interact Club.



These photos are not from Moshi Primary but Soweto school. Like many Tanzanian school compounds much of the ground is bare, dry and dusty for most of the year unless a tree canopy is established. On the day of the SGG monitoring hundreds of young trees had been recently planted [see above right], but groups of pupils were still busy digging planting holes for the hundreds of seedlings to be planted the following day [see above left]. Several of the Tanzanian Rotary clubs organised most of their tree-planting in school grounds, but at Moshi a significant number of fruits were distributed to members of the public to grow in their gardens [see left]. It is a matter of debate among tree-planters, but SGG prefers private ownership of trees where there is usually a higher survival rate compared to trees planted in public institutions.

Machame is similar to Moshi in that both are located at the foot of Kilimanjaro. However, the Rotary Club of Machame have adopted a completely different approach to tree-planting. The Machame plan is to promote two species which are relatively new to their locality. One species is *Moringa oleifera*, the other *Tephrosia vogelii*. *Moringa* has so many nutritional and medical benefits that it is increasingly viewed as a 'miracle tree'. *Moringa* dried leaf powder is regarded as a high value food supplement, so harvesting and marketing those leaves can provide a significant income for a small-scale farmer and an alternative to the traditional coffee-growing. In general African farmers from south of the Sahara lose about 1/3 of their crop production from pest damage. Better pest control is vital for improved farm incomes, but synthetic pesticides are both costly and damaging to farmers' health. For most small-scale farmers better pest control requires the use of natural & cheap biopesticides, and *Tephrosia vogelii* leaf is one of the best raw materials for a simple home-made insecticide.



On 13th November 2017 SGG made a monitoring visit to Machame. In one coffee-banana shamba 96 Tephrosia [see above left] and 77 Moringa were recorded. In another 170 Moringa [see above right] were found. 444 young trees were counted that day with an additional several hundred found in Machame Rotary's tree nursery. The stated plan at that time was to grow up to 4,000 seedlings of Tephrosia or Moringa by the end of April 2018. There was insufficient time in April to check progress at Machame, but the Rotary Club reported that they had distributed approximately 2,000 Tephrosia or Moringa seedlings & 350 avocado by mid-April. Machame's tree-planting has been sponsored by the Rotary Club of **Guisborough & Great Ayton**.

There are five other Rotary clubs found on the slopes of Kilimanjaro. These are the Rotary clubs of Mwika, Marangu, Kibo, Mamba and Mkuu Rombo. They all had similar tree-planting schemes, but each was slightly different in terms of strategy.

Mwika Rotary's programme focussed on the need to educate young people, the next generation, on the importance of tree-planting and at the same time improve the school environment by planting in school grounds. Their project was entitled 'one student, one tree', and it contained the idea that each pupil should be responsible for one tree. The programme was implemented by 14 primary schools with a total of 2620 pupils within the vicinity of Mwika. By the time of SGG's visit on 14th April, Mwika Rotary recorded that they have already planted 2,106 young trees, which included 79 avocado, 83 mango and 971 *Trichilia emetica*. This tree-planting has been sponsored by the Rotary clubs of **Tyneside, Llangollen, Birtley and Milton Keynes**. Mwika club have produced a PowerPoint presentation which is available from SGG for any interested parties.

Marangu Rotary Club are also working with a series of local schools. However, fewer schools are involved and at these schools other activities [e.g. water harvesting at Kirafue Primary] are being supported. Here improved child nutrition is regarded as important, and most of the early planting was avocado. There is another aspect of Marangu tree-planting. One member of Marangu Rotary is Simon Mtuy. He comes from one of the highest villages on Kilimanjaro and manages a sports adventure company. You can check details of his work through www.nomadicexperience.com/about-us/simon-mtuy. Like many local people involved in climbing Kilimanjaro and seeing the steady shrinkage of ice on Kibo summit, Simon is well aware of the forest clearance and environmental degradation on the mountain. His response is to plant several thousand indigenous trees each year, planting at a variety of locations on Kilimanjaro. **Bala, Barton-le-Clay, Dunstable, St Albans, Baldock and Watford** Rotary clubs have now sponsored Marangu to grow 7,500 trees during Ian Riseley's presidency. At least half these trees have been planted through Simon Mtuy's activities supported by Bala Rotary, but the other sponsorship is more focussed on support for schools around Marangu.



Here [see above left] is Simon Myuy's team planting on the degraded upper slopes below the tree line. At Mboni School 40 avocado and 18 Ficus have been planted. Each young tree is protected from wandering goats by a cone of sticks. [See above right.]

Kibo Rotary's approach to tree-planting was to support the Interact Club of about 50 students at a single school, Darajani School in Marangu. The Interact students take care of a tree nursery, which provides seedlings both to improve the school compound and also for sale to the local community. When SGG paid a monitoring visit to Kibo on 21st April there were 122 new trees planted in the school grounds, approximately 300 seedlings almost ready for planting in the nursery. A further 155 were counted within the local community. The work of Kibo Rotary was sponsored by the Rotary Club of **Easington and Peterlee**.



Here [see above left] Paul is discussing aspects of tree-planting with the interactors of Darajani School. It became apparent during this discussion that Tanzanian youth are increasingly aware that parts of their region are suffering from desertification, caused by tree-felling and overgrazing. Although Kilimanjaro has a high population density, it is possible to find small pockets of land – often when the owner now works & lives in town – which are available for tree-planting in order to produce a new patch of woodland. This photo [see above right] shows such an example. In addition to the mature trees, there were 70 recently planted seedlings counted here.

Mamba Rotary Club is composed of members who come from villages in the highest zones of cultivation. Their concern is twofold: one is to restore the tree cover after decades of tree-felling and neglect of the forest; the second is to find suitable forest products which can provide an income to the villagers. In 2015 the club began a project to plant 50,000 trees both along rivers to protect water sources and also on village farms. By November 2017 when SGG first came into contact with Mamba Rotary they had managed to plant approximately 8,500 trees. The club had also established a series of 'Rotary community corps' i.e. local people who are not rotarians but who assist in the implementation of local projects.

Communication delays meant that it proved impossible to make a monitoring visit to see Mamba's tree-planting work. However, at a brief evening meeting on 21st April some important details of progress were reported. One of the 9 villages where Mamba project is implemented is Kokirie village, which is also the location of Mamba's main tree nursery. The manager of that nursery reported that 5,650 non-fruit trees had been planted since 1st July 2017. Mamba Rotary also wish to promote a suitable forest product. One of these is Hass avocado. This fruit is not only suitable for the local climatic conditions, but there is also a ready market for such produce. Thus, part of the agreed sponsorship of Mamba Rotary was the purchase of 100 avocado trees to be distributed to farmers within the 9 villages. The second forest product is honey. They already possess 160 hives, some protective suits & a honey extractor, but at present producers are only selling at local markets. They need to find appropriate outlets to a wider market.

Mamba Rotary activities have been sponsored by the Rotary clubs of **Berwick** and **Glenview Sunrise, Chicago**.

The Rotary Club of **Mkuu Rombo** have successfully worked with SGG and with Rotary sponsorship for a few years, so theirs is one of the larger projects. During this year of Ian Riseley's presidency they are partway through a 3 year school tree-planting competition. Part of this competition involves some of the schools establishing their own tree nursery, but SGG is not yet aware of how many schools have managed to do this. They have also sponsored two local planting groups – one at Huruma Convent near Rombo Mkuu, the other based at Mengwe village. There are more than 25 schools participating in the competition, and in order to get the competition off to a good start Mkuu Rombo have given out 2900 seedlings to participants. In the grounds at Huruma Convent 1308 new trees were counted. In addition, they have supported the establishment of a tree nursery in Mengwe. This nursery was visited on 9th April when there were about 2,000 seedlings ready for distribution. On a later visit to Mengwe SGG undertook an inspection of trees planted at Malowa, St John Vianney School. Here 869 trees were recorded as well as an estimated 1,000 seedlings being stored for planting in October. These 869 already planted trees were sponsored by the Rotary Club of **Cleveland, UK** whereas all other tree-planting by Mkuu Rombo was supported financially by **Sherwood Sunrisers** Rotary Club.

Mkuu Rombo Rotary is a small club where much of the actual planting is done by community groups & institutions which are independent of Rotary. A similar situation exists at **Usa River** Rotary Club which is located not on the slopes of Kilimanjaro but on the lower slopes of nearby Mt Meru. Here nearly all the trees counted were planted by the local Mali Hai club, whose sole purpose is tree-planting & environmental improvement, usually on public land [e.g. on school grounds, along roads, around water sources] Most counting of these trees was done on 24th April, which was the last day of fieldwork in Tanzania and which proved to be a very wet day. A total of 1626 trees were counted but some planting sites were missed and SGG accepted that Mali Hai have probably planted some 2,400 seedlings this year. This work has been sponsored by the Rotary clubs of **Wickham** and **Gateshead**. Furthermore, there were an additional 21 fruits and 1129 non-fruits planted on a private estate where the owners wished to create a small forest. This was sponsored by the Rotary Club of **Tyneside**.



Pupils in the Environment Club at Munga Primary stand next to trees planted in the previous 12 months. There were 171 such trees in the school grounds. *[See top left.]* A row of *Acrocarpus* trees planted at Useri Primary *[see above]*. These schools are both participants in the Rombo tree-planting competition. Current school enrolments is not known at present but there will be several thousand young Tanzanians involved in this tree-planting. What these competing schools want for prizes is an improvement in the water supply to their schools and villages, so there is a strong humanitarian aspect to such tree-planting.

An estimated thousand seedlings wait to be planted at St John Vianney School in Malowa. They have been supplied by the Ndaswa group in Mengwe *[see left]*. This school has large grounds so they intend to plant up to 5,000 seedlings in the next few years, despite the fact that they are located in the lower, drier zone of Rombo district.

This lightly wooded area is one of the source areas of water for nearby Usa River town. The Mali Hai club has already planted more than 500 seedlings here to increase the tree cover, and they are discouraging cultivation here *[see lower left]*.

This is a patch of degraded forest on a private estate, where Mali Hai have planted more than 1,000 trees recently in order to re-establish the original forest cover. These pockets of forest with a variety of indigenous tree species are important for the maintenance of biodiversity – which itself is an important part of Tanzania's tourist appeal.

All of the locations previously mentioned suffer from seasonal drought and the occasional failure of the rains to produce an adequate harvest, although usually there is sufficient rain for a satisfactory yield for farmers in most parts of the area. The next three locations all suffer from inadequate rains being the norm. The landscapes are dry, dusty, usually with very limited tree cover, and bedevilled with soil erosion. It is no coincidence that these locations are on the fringes of Masailand where the traditional pastoral economy has encouraged overgrazing, annual burning, frequent removal of woody material by charcoal burners, and limited attention to the need for soil conservation. The population density in these areas is significantly lower than on the slopes of Kilimanjaro and Meru, so there is abundant land where trees could be grown. However, there are great difficulties in doing so because of the lack of water, which is essential when the trees are young with their root systems not fully developed, and goats and cattle being allowed to wander freely during the dry season in search of whatever greenery they are able to find. Thus, tree-planting is possible but much more risky in these next three locations.

Same district is well known for being hot, dry and dusty with frequent water shortages, but Same Rotary have been active in tree-planting where there are opportunities to do so. They have focussed on school grounds where there is at least some water available. This year SGG made contact with two other institutions in Same concerned with tree-planting. One was the Lutheran Cathedral, where there is concern to improve the Cathedral grounds and also a programme to encourage young people to engage in tree-planting at their homes. The other was the District Commissioner's Office, which is now implementing a long-term environmental improvement programme, called "Same is not the same!" in an effort to try and reverse Same's reputation for being a dry and dusty place. Sponsorship from The Rotary clubs of **Rhondda, Derwentside, and Marlborough Massachusetts** as well as funding from SGG has supported tree-planting with Same schools, Same Cathedral and Same local government – but it should be appreciated by all concerned that it will take many years of concerted effort before Same becomes green again.



This is Majengo Primary [see above left] at the start of the November rains and here [see above right] is Kisima Primary in April at the height of the rainy season. What is clear is that most primary schools around Same have large patches of bare ground & soil throughout the year. This makes them very vulnerable to soil erosion, especially during the occasional but heavy thunderstorms which are typical of Same. Kisima School had planted 50 cashew trees in the previous 12 months, but only 4 had survived until the April monitoring visit. Many had been buried by eroded sand & soil filling the planting holes. For many schools in this district tree-planting will be unsuccessful unless accompanied by soil conservation work. Another essential requirement is a secure fence. Those private schools around Same town with a good fence can readily grow trees, but most public schools lack a fence and are extremely attractive to wandering goats, who are skilled at eating anything they can reach.

In view of **Mwanga**'s location on the low ground to the west of the Pare Mountains, the local Rotary club has been remarkably successful with tree-planting focussed on 2 sites. One is Kisangara School, where an estimated 1,000 seedlings have been planted this year. The other site is the Kisangara Vocational Training Centre and its farm. Much of the farm is used to grow the usual maize and beans, but within part of the large field 214 cashew trees have been planted. Mwanga Rotary have been sponsored by the Rotary clubs of **Barrow Meridien** and **Toronto**.



This shows *[see top left]* some recent tree-planting around the buildings of Kisangara School. One basis for the school's success is that it has a good water supply. Another reason is that it has its own tree nursery, *[see left]* situated right in the middle of the classroom blocks – every student must walk past this every day.

The Vocational Training Centre is concerned primarily with increasing employment for youth in Tanzania. Thus, they have planted cashew nuts, a new cash crop for this locality, on their farm *[see top right]*. Cashew nut trees are encouraged by the government which is seeking to find a suitable cash crop to replace sisal. Another possible opportunity for youth employment throughout the areas visited by SGG, but particularly useful around Mwanga and Same, would be soil conservation work.

The last Rotary club to be visited in March-April 2018 is the Rotary Club of **Hai**. In some ways it has the potential to be the most important of the Rotary clubs considered so far, because it is located on the boundary of Kilimanjaro Chaggaland, where cultivation and agroforestry are the norm, and traditional Masailand where treeless, dusty landscapes are more typical. It could be said that this is the frontline in the struggle to halt decades of environmental damage and return Tanzania to a landscape covered with trees.

Hai Rotary are a new club based at Boma Ng'ombe, which is a rapidly growing town on the main road between Moshi and Arusha. A decade ago this was a dry and dusty area, but in recent years there has been significant tree-planting as the town becomes more green. On one side of the town there is much new settlement, often by people who were traditionally cultivators and who generally understand the value of tree-planting. On the other side, not far from the edge of town, there is strong need to persuade pastoralists to value trees and plant them.



This is Hai Rotary's tree nursery at Uhuru Primary in Boma Ng'ombe [see above left]. There were 813 seedlings ready for transplanting about 3 weeks later. This is the view [see above right] from one of the schools which Hai Rotary is supporting. The photos show a field of maize at the height of the rainy season. It was necessary to paddle through a stream which was flooding the road to reach this school, and surface water is clearly visible in the field. Yet this maize will not produce an adequate harvest. This locality needs trees to reduce soil erosion, to improve retention of soil moisture, and also to provide a greater diversity of farm produce, which in turn can produce greater farm income.

A great advantage for Hai Rotary is that there is a large, well-organised tree nursery close to the Boma Ng'ombe and an experienced agroforester who is dedicated to increasing tree cover in Hai district. You can read details of this by browsing www.trees4kili.org. At an impromptu visit to the Trees4Kili nursery, we estimated that there were several thousand seedlings ready for planting in April. On the day of the visit Jeremy estimated that Trees4Kili had probably planted 13,000 seedlings so far this year, so I promptly 'purchased' 3,750 of these already planted trees. SGG would have purchased many more seedlings from Trees4Kili but we had run out of sponsorship money by then. So far Hai Rotary have been sponsored by the Rotary clubs of Stokesley and Newcastle. What SGG can suggest is that if any Rotary club anywhere in the world wishes to involve itself in tree-planting in combination with an international humanitarian development project, Hai Rotary and Trees4Kili would be an excellent place to start.

There are two other Rotary projects which tree projects which should be mentioned here. The Rotary Club of **Stockton** have friends working at the **International School of Mwanza**, so Mwanza appeared an excellent location for their Rotary tropical tree-planting. Unfortunately, Tanzania suffered widespread flooding in April. It particularly affected Dar es Salaam, but also affected Mwanza – so tree-planting on behalf of Stockton Rotary has been delayed. The last Tanzanian Rotary club to mention is **Babati**. They have no sponsoring Rotary club as yet, but they have received a grant from SGG. Babati Rotary have ordered fruit trees to be planted in local schools, but these fruits will not be ready to transplant before June-July 2018.

CONCLUDING REMARKS

For those Rotarians still reading this lengthy report, I hope you will reflect on the question “where do we go from here?” It is worth keeping in mind the following details about this tree-planting:

- by late May the official tree count for this project reached 41,475,
- in addition to this figure there were many locations where trees could have been counted as part of the project, but where my fieldwork time was insufficient to get a proper recording. This was especially true in the case of Busia, Rusinga and Mwanza locations. The real figure for trees planted by SGG’s partners during Ian Riseley’s presidency could well be 10 - 20,000 higher,
- the funding for this programme has come from 44 donor Rotary clubs and Sustainable Global Gardens [SGG]. The total donations from UK, North American and French Rotary clubs now stands at £7,955, with an additional estimated payment of £1,606 by SGG. This gives a total cost of less than £10,000. As SGG has not yet received tree counts from Babati Rotary or the International School of Mwanza, and as 5,465 of the trees planted were the more expensive fruits & bananas, this overall costing provides strong evidence to justify SGG’s claim that you can “plant a tree for 20p”,
- the implementation has been carried out by SGG and 12 Tanzanian Rotary clubs. In addition there have been more than 50 NGOs, community groups and schools who have undertaken significant planting. We do not know how many young school students have been involved in planting and improving the school environment, but the Mwika scheme engaged more than 2,000 students. The Mkuu Rombo competition will also require work from thousands of students, so the aggregate figure for all students engaged in Rotary tree-planting by the 12 Tanzanian clubs must be well above 10,000,
- it is difficult to know how many beneficiaries there are in those schemes where planting has been done on household plots, but the Newcastle-Gosforth scheme alone directly benefits 900 people composed of orphans and their guardians. It is also worthwhile remembering that 40,000 trees is a significant carbon sink from which all of us might benefit in a small way,
- it is impossible to be precise about how much income will be generated by this project. However, SGG has been promoting agroforestry in West Kenya for several years, and we think it likely that a tree which survives for 5 years will be worth the equivalent of £5. This can only be a very approximate estimate: some seedlings will die in the first year after transplanting, others will be sold after 1-2 years as thin poles, many will be used on farm and achieve no commercial value, while fruits will give a much greater harvest than £1 per year. The point here though is we can suggest that this project is adding approximately £40,000 every year to the local economy where these trees are planted.

On the basis of the above information it would seem that this agroforestry project gives Rotarians worldwide a great opportunity to bring humanitarian development as well as environmental improvement to some of the planet’s less prosperous societies. Please consider how you as a Rotarian and your club can support the continued greening of Africa. If you and your Rotary club have any questions about how you can involve yourself in such activities, please contact us through www.sustainableglobalgardens.org.uk or by email to sgginfo16@gmail.com. And finally, a great thanks to all those Rotarians who have supported tropical tree-planting over the last Rotary year.

Rn Paul Keeley

Rotary Club of Newcastle-Gosforth

APPENDIX A

Donor Rotary Club	Req.Trees	Req. Fruits	African Rotary Club	Estimated total	Trees	Fruits	Bananas	Counted
Cannock		200	Arusha RC	729	83	182	464	C/R
Consett	1000		Arusha	1024	1000	24		193 C
Berwick	1000	50	Busia/Siguli	490	443	47		R/C
Berwick			Mamba	712	625	87		R
Calgary			Chrispinus Omuse	73		57	16	Counted
Stokesley			Hai	1135	1135			Recorded
Stockton			Int school Mwanza	0				—
Easington and Peterlee			Kibo	282	282			C
Guisborough + Gt Ayton	1000		Machame	2350	2000	350		R
Glenview Sunrise Chicago			Mamba	428	375	53		R
Newcastle			Hai	2270	2270			R
Barton le Clay			Marangu	475	450	25		R/C
Dunstable			Marangu	475	450	25		R/C
St Alban's			Marangu	475	450	25		R/C
Baldock			Marangu	475	450	25		R/C
Watford			Marangu	475	450	25		R/C
Bala	2500		Marangu Simon	3750	3750			R
Newcastle Gosforth		400	MMO OVC groups	3629	2959	312	358	C
Saltburn	1030	100	Moshi	1173	1000	173		R
Sarlat France		250	Moshi	283		283		Recorded
Methyr Tydfil		50	Moshi	68		68		R
Riberac		200	Moshi/Philip Njau	226		226		R
Bergerac		100	Moshi/Mukesh	113		113		R
Llangollen		50	Mwika	51		51		R
Barrow Meridian	500		Mwanga Kisangara	997	997			Counted
P.Wright Toronto		250	Mwanga VCT	315		315		C
Birtley		50	Mwika	51		51		R
Milton Keynes		60	Mwika	61		61		R
Tyneside	1670		Mwika	1943	1943			R
Tyneside	1000	30	Usa River Mike Leach	1150	1129	21		C/R
SGG Open House			Usa River ML/Mali Hai	400	400			C
Gateshead	500		Usa River Mali Hai	1000	1000			C
Whickham	1000		Usa River Mali Hai	1000	1000			C
Cumbernauld			Mamba	60		60		R
Cleveland	500	80	Rombo Ndaswa	869	849	20		C
Sherwood Sunrisers			Rombo Mkuu RC	1400	1400			R
Sherwood Sunrisers	5000		Rombo Huruma	1308	1308			C
Crook			Rusinga	996	900	96		C
Teesside West			Rusinga	976	900	76		C
Rhondda			Same	618	618			C/R
Derwentside	500		Same	618	618			C/R
Marlborough Massachusetts			Same	2400	2400			R
Thirsk	36		RC Hai	114	114			R
Haverhill	100		Nyusa Farmers	150	100	50		C
Derby South	25		Nyusa Farmers	300	200	100		C

Durham Elvet	1000		Nyusa Farmers	1295	993	302		C
SGG contingency			Chrispinus Omuse	1100		1100		C
Leith			Nambale	903	881	22		C
SGG contingency			Philip Nakori-Tenda	90	88	2		C
SGG contingency			Babati	200		200		=
Total funding	£8,561							
				41475	36010	4627	838	