Palni Hills Conservation Council

35th Annual Report 2019-2020

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The 35th Annual Report
2019 - 2020

Introduction

The healing power of Nature! - The power of the youth and public perceptions are rapidly changing, ripening really, which many say is due to 2020—"a year like no other"—and we all encourage the political will to follow in the push to mitigate climate change and to retool industries away from polluting our home. We have learnt a great deal in this year running into 2021, all compressed into a lockdown on a scale of magnitude unheard of in history. The Great Pandemic of 2020 left no corner untouched; isolated and vulnerable Antarctica even underwent a break from tourists! Covid-19 (Sars-CoV-2) taught us how fragile we are. Futurist commentaries hardly do justice to the economic, social, and environmental impact we continue to experience. As the Pandemic worsened and lockdowns were enforced the environment flourished. Notorious for its pea-soup smog—the air in Delhi cleared. The noble Himalayas were now visible from hundreds of kilometres away. Despite Covid city folks breathe again, rivers run clean again. We meet and even concertize by Zoom and Skype. "Commerce before conscience" though is a critical catchphrase as "pandemic profiteers" thrive.

Covid-19 meant wild animals roamed the streets of deserted cities, browsing on the unattended hedgerows. Kodaikanal's purple cloud of inversion pollution happily dissolved for want of vehicular traffic. As it happens ample rains bless the Palani Hills while on other sides of the world cyclone activity reaches record levels in the Gulf and Caribbean region of the Americas

and in the Asia Pacific. The ongoing effects of modern civilisation mean that ocean warming increases the chances of perilous storms into the future and the Palani Hills in that case will not be immune. As other areas experience drought Earth's land mass warms too which brings about another "hottest year on record" with conflagrations across the heat-stressed forests of America, Australia, the Amazon and even the chilly reaches of Siberia. As if heat waves and storms aren't enough, locusts bloom in East Africa and pay a visit to India. This meant yet more pesticides deployed—heroes to the ready.

Weatherman Everton Fox points out only so much moisture is available in the Earth's atmosphere. If storms are abundant in one place causing flooding, destruction of property, landslides and loss of life, Fox says, this will show up as drying in other areas with drought, fires, and more destruction of property—an imbalance wreaked upon our times. In Tamil Nadu we welcome rains, while shifting out of season this disrupts agricultural norms and brings on fungus and other problems to farmers.

PHCC began 2020 by taking action against a devastating weed-killer. Paraquat was deployed up and down our beautiful roadsides. This horror blackened greenery and yellowed grass banks from Adukkam and Forest areas of Law's Ghat right up to the Government High School until Moonjikkal. What was the point of killing the short grass along the roadsides?—cows looked as puzzled as the people. Revenue Divisional Office (RDO) Karmendran cooperated with PHCC in summarily halting this use of herbicide hazardous to children, livestock, milk supply, pets, wildlife, microbial life and airborne pollinating insects. We cannot tolerate such attacks by misguided officials encouraged by the chemicals industry.

The Health of the Hills is the Wealth of the Plains is the PHCC motto:- the Palani Hills Watershed nourishes lakhs (hundreds of thousands) of folks in the Plains, even while the environmental impacts of agrichemical runoff raise alarms around the world. Upon investigation, PHCC found that the weed-killer in use by chemical dependent farmers and by authorities along the roadsides in Christmas 2019 was not in fact the dreaded

Glyphosate (Monsanto's Roundup, subject of global litigation) but the cheap and far more deadly Paraquat: do please keep this name in mind. Paraquat exposure (in food, drink, spray exposure and burn off) links to cancers, Parkinson's disease, birth defects, and various other debilitating and life-threatening disorders. In this age of pandemics and the importance of immunity, PHCC joins in demanding weed killer-free comestibles.

PHCC research revealed that the Indian public has raised protests to this dangerous chemical (especially in Odisha) going back years: since Paraquat is the chemical of choice for suicide all over Asia. RDO Karmendran compiled a case dossier on suicides in our Hills for 2019 and showed that 75% of such tragic deaths involved Paraquat—easily available at home in case of a family quarrel. Tellingly, while authorized for UK production and bulk export to Asia, Paraquat use is banned in the United Kingdom! Why? Meanwhile, Paraquat use in the United States is limited to only permit-holders.

This use of this suicide toxin Paraquat is to be condemned in the Hills. Treated brush and weeds incinerated in fields releases into the air Paraquat burn-off chemicals. The dilution of Paraquat into the public water supply from run-off must raise serious concerns for the Nation's hospital systems. Herbicide is mandated to carry labels which warn of the dangers of exposure and advice about protective gear like hazmat suits and gas masks (!!) without which workers are in danger. Does anyone take them seriously?. Meanwhile, to pollute one's water supply is surely a heinous act—a transgression against public safety—and must halt. PHCC calls on the Government to act responsibly to ban weed killer in Indian Watersheds.

Covid has raised the alarm: we must protect the environment as a source of immunity and by containment of viral assaults. Colman O'Criodan of the World Wildlife Fund says: "Leave Nature alone!"—

See 'Paraquat, Glyphosate and Me' : **Leaf Litter** *- NTFP EP Networking Forum, Spring Equinox, March 2020.*

See 'Linking Human Destruction of Nature to COVID-19 Increases Support for Wildlife Conservation Policies'–Ganga Shreedhar and Susana Mourato: Environmental and Resource Economics: <https://doi.org/10.1007/s10640-020-00444-x>

addressing viral threats like rabies and corona from our disturbing the natural world.

With the help of our Chennai-based well-wishers, Ms Satya Rupa and Mr Om, PHCC joined the GAIA group against plastic incineration, the Basel Convention against hazardous waste and PHCC is participating in GAIA webinars and the BFFP movement to break free from plastics.

With the support of Mr Antony, Mr Sherriff and Adukkam staff, Mr Madhu Ramnath leads tireless work with villagers in water conservation and research into NTFP wild foods;- this is a field vital as a bulwark against food and pharmacological stresses in the global future. Under the leadership of Mr Madhu internships have now been initiated for the study of wild foods and water issues at the PHCC Centre in rural Adukkam.

Covid and environment. Scientists and medical researchers from around the world warn about the need to minimise ecological disturbances - since human intrusion into Nature releases animal-to-human pathogens into our manmade environment. We have not only to coexist with Nature but to follow the rules of the Planet - "We must make peace with Nature," says UN Secretary - General Antonio Guterres. We must think in a new way and of a **different type of development.** This is our future. Mid-twentieth century wilderness covered more than 65% of Planet Earth, reports David Attenborough, while the natural cover had reduced to 30%. We are in for epidemiological shocks globally and locally and must bring our development policies into line with epidemiological reality.

TN Action Plan on Climate Change. In the months before the world went into pandemic-induced paralysis, the Tamil Nadu Department of Environment released a ten-year TN Action Plan on Climate Change 2.1 (TNAP-2) scheduled to come into effect as of 1 January 2021. Encouraged by this, we are at the same time concerned that as of date nothing has been heard, and last year the Government allotted only three short weeks for public remarks on the final draft. Considering the public monies involved - a disbursement of almost $7 billion calculated in US dollars - the Government ought to hear comments from the taxpayers. Media underreported the

TN Action Plan-2, which, by the way pointedly omits mention of public stewardship and NGO cooperation. Moreover, the TNAP-2 is absent from the Department of Environment website which, nonetheless, still hosts the 2015 TNAP-1. "NGOs have raised red flags on the manner in which the [TNAP-2 final] draft was drawn without gathering inputs from stakeholders like farmers, local bodies, and academics" (The News Minute 5.2.2020).

If you would like to engage TNAP-2 please access the Plan at—https://ourgovdotin.files.wordpress.com/2020/02/tamil-nadu-climate-action-plan-draft-compressed.pdf.

TNAP-2 is an overall development plan from 2020 to 2030 with large sections on health, water, rural livelihood and so forth, with hopes of consider-able finance from the Central Government and other sources. Here are some items to ponder: the TNAP-2 mentions three (3) massive coal fired power plants either coming online or under construction with the Central Government planning on yet more! We seem to take one step forwards and three steps back!

Prime Minister Narendra Modi addressed the Nation in November 2020, saying new initiatives will soon make India "a world leader in renewable energy". This should incentivise Tamil Nadu to make the TNAP-2 more relevant to the actual **climate emergency** referred to by UN Secretary-General Antonio Guterres, who entreated India to get out of **coal burning**, —big contributor to GHG worldwide, in a recent interview at Columbia University Guterres stated, "Making peace with Nature is the defining task of the twenty-first century. It must be the top, top priority for everyone, everywhere."—Let us see how that goes. We know now how the air and water can clean itself, Nature is a healer—if this healing be disruptive to commerce and livelihood—is there any alternative but to change our way of life?

TNAP-2 while intending (happily) to increase tree-cover omits how to seri-ously strategise reduction of greenhouse gas emissions (GHG) carbon dioxide, methane and nitrous oxide (CO2 - CH4 - N2O), whose reduction might fit into National Goals. Relative to its gross domestic product India emits twice as many GHG's as

the world average, hence the UN call to reduce coal burning. As of 2015, just under 70% of GHG emissions come from the energy (coal etc) sector, while almost 20% is from agriculture, the rest from industry, land-use change, forestry and waste (USAID report).

As it turns out India's CO2 emissions fell for the first time in forty years due to the 2020 pandemic. The TNAP-2 'economic sector' Items §6 and §7 (below) are meant to have specific calculations of our State's contribution to India's climate change mitigation. TNAP-2 contains seven sectors representing the $7 billion dollar Budget Allocation: §1 Sustainable Agriculture: 22.1%.—§2 Water Resources: 5.8%.—§3 Forests and Biodiversity: 0.9%.—§4 Coastal Zone Management: 1.5%.—§5 Strategic Knowledge Management for Climate Change: 0.1%.—§6 Enhanced Energy Efficiency & Solar Mission: 30.2%.—§7 Sustainable Habitat: 39.3%.

While a sector on **Sustainable Agriculture** is promising, Government support for organic start-ups in farming and entrepreneurship is vital. Our future lies in "greening" our environment and food supply. The Planet must it seems go organic and reduce animal consumption just as a practical strategy for immune fortification. Again, this is our future. Water management and natural pest-control in farming can only boost the immune system of the Nation. This will bring down the cost burden of treatment, absenteeism, etc. §4 a bulk of Coastal Zone Management ought to involve ***mangrove reforestation*** along the cyclone / tsunami - prone eastern coasts, while serious controls on sea-polluting industries must be enforced. This massive disbursement ought to go for prevention — *advance mitigation* — not just for dyke-building contracts for coastal cities.

As for public inputs, we would ask: what is in the works for greater research and development (R&D) into sustainable energy? Using less energy and get-ting off our addiction to fossil fuel must now be in focus: TNAP-2 allocates 30% of the multi-billion-dollar budget for Energy including investment in renewables like solar and wind whose raw resource Tamil Nadu is situated to provide.

For an up-to-date discussion of India's GHG on the world stage see 'The Key Drivers of Indian Greenhouse Gas Emissions'– Economic & Political Weekly, Vol 55, Issue No 15, 11 Apr 2020.

The larger part of the TNAP-2 Energy budget is for transmission efficiency, construction, and increase in the use of natural gas (NB *fracking* releases GHG methane) and burning bio-waste such as sugarcane bagasse. GAIA reports that **incinerators for plastic waste** are being imported for use around the country. Innovative alternatives do exist for petro-plastic, but the will has to be to **retool**. Today, concrete, asphalt, plastics, glass and steel outweigh the bio-mass of the Planet! Meanwhile, burning not only plastics but agri-waste sends GHG into the air. Sectors §6 and §7 of TNAP-2 are supposed to show actual calculation of climate change mitigation and to tally with India's commitment to the Paris Climate Accord. However, in the TNAP-2 the only actual forecast about **mitigating climate change** is a weak one: viz, for increased forestation, representing a relatively minor aspect.

The TNAP-2 requires calculating total emissions of CO_2, methane, nitrous oxide etc., and needs notes on the environmental stresses brought about by consumer *over-consumption*. In some places, mitigation is defined as *"mitigating the effect"* of climate change— like contracting for dykes to hold back the rising seas. Must we compelled to witness cities flooded, saltwater decimating riverine coastal farmland and plastic waste accumulate and carcinogenic airborne effluents increase with plastics incineration? Let us do away with petro-chemical plastics!

Good news is that TNAP proposes investment of ₹4800 crore (US $672,000,000) in wind power and more for solar power over the next decade. We urge greater technical R&D into new types of wind turbines where Tamil Nadu industry could lead the field. Key to this is for the Government to incubate new technologies in wind and solar. We must engage the intellectual and creative minds of students in and outside the State, offering awards and prizes for innovation.

Schemes within the Plan must engage educators and creative talents of undergraduates. As it is, TNAP-2 schemes propose pumping water back up in two hydroelectric plants with solar power — modifying public transportation, reducing electricity transmission loss from 18% to 14% etc. Efficient utilities,

groundwater conservation, efficient poison-free agriculture, coastal erosion prevention are all suggested under §7 "Sustainable Habitat".

Another key for Tamil Nadu is to strategise energy needs—e.g., solar power and hot water units on Government institutions; retro-fitting dwellings and offices; public transport with hydrogen fuel cells; bio-gas from farm waste; cooking by wind power from oceans as in Europe—and from our 10° latitude sunlight amplified by field reflectors. There is a huge field waiting for **steam turbines generated by solar heat**. The package of solutions could include energy from ocean waves, tides, and hydrogen, CO_2 extraction, even the dream of atomic fusion some think feasible within the decade. Even as global population is thought to decrease over the coming century, we walk a tightrope. As new nuclear plants are promoted around the world (—which Germany has rightly defunded); quite apart from the deep poisoning of the Planet by nuclear waste, the probability of accidents increases with weakened oversights. While nuclear plants boil water to make steam they are ticking time bombs. ***Let's make steam turbines running on sunlight!***

Grasslands:- There has been a wide recognition around the world of the value to the environment of native grasslands, once considered "wastelands". **Native grasslands are a carbon sink** and they conserve water like a sponge releasing it as a steady flow to the lower reaches of any watershed. Tragically, much of Palani Hills native grasslands have been overtaken by foreign (exotic) "plantation" trees inserted into the environment on a massive scale out of ignorance (for profit) by authorities and spread as a "green desert" by reseeding.

These trees contribute little to the local ecology either for ungulate, avian life or for water retention. As a result of *plantation invasion* into their native habitat many animals like the majestic **Indian gaur** are forced into human habitations to graze on lawns and shrubs; and the endangered wild sheep, **Nilgiri tahr** *(varai aadu)* State Animal of Tamil Nadu is losing habitat. PHCC is dedicated to avoiding clear-felling exotics, however, contrasted with a measured pushback of invasive species like wattle, eucalyptus, and

pine, which threaten the last remnants of our native grasslands. These precious grass-lands have been decimated over the past generation as IISER - Tirupati mapping in cooperation with INTACH and PHCC has shown.

Early in 2020 PHCC planned a Project to restore a southern flank of the grasslands from Vattakanal to Kookal, traditional grazing ground of the Nilgiri tahr, over a five-year period: when Covid-19 struck and plans were delayed. Let us get back on the grasslands restoration track in 2021. This will require funding.

PHCC is increasing the wild tree seeds collection for native tree planting programs this past year which we think will again be more forthcoming in 2021 after the generous rains the forests have received for the past two years. New native seeds gleaning on a bigger scale will require funding.

The effect of climate change on the Palani Hills and Kodaikanal—was to see a slight increase in temperature shown to have some effect on wildlife, though temperature will not increase here as in Northwest India and Pakistan where in 2020 folks underwent 53-54° Celsius for days. Our oceans warming endangers sea ecology, while currents are ominously changing. Meteorological agencies say the Southwest Monsoon will be even more unpredictable in timing and intensity, as evident in recent years. Important to the South the Northeast Monsoon brings 60% of precipitation to Kodaikanal but be accompanied by stronger downpours, more erosive cyclones, tree fall, flood damage, and crop loss. Not a very jolly forecast! Again, our future!

Tamil Nadu has set up a Climate Change Steering Committee headed by the Chief Secretary, while a Nodal Climate Change Cell has been set up in the Department of Environment. Reportedly, Tamil Nadu Anna University will provide inputs of experts. With critical enthusiasm, PHCC is to network with concerned environmentalists and the Department of Environment and to join with NGOs and organizations to make our opinions felt about the seriousness of this process for future generations in the **mitigation** of climate change.

(For the full article on the TN Action Plan-2 by PHCC EC member Mr Clarence Maloney, please visit "TNAP-2" www.palnihills.org).

Millennia-old sayings encourage us to respect Nature, follow her rules, and care for her. Prayed in these ancient exhortations (Prithvi Sukta): "May Nature, Queen of all that is, make ample space and room for us. On whom the running universal waters flow day and night with never ceasing motions, may she with many streams pour milk to feed us. May she bedew us with a flood of splendour. May Earth put out her bounties for us, a Mother unto her son. O Earth, auspicious be thy woodlands, auspicious be thy hills and snow-clad mountains. Kind, ever gracious be the Earth upon which we tread, the firm Earth, born by order, mother of plants and herbs, the all-producer. The flowing waters purify our bodies. Cleanse myself O Earth with that which cleanseth Thee.

May Earth grant us breath and vital power, and give us a life of long duration. In hamlets and in woodland, and in all assemblages on Earth, in gatherings, meeting of the folk, we will speak gloriously of Thee. O Earth, our Mother, set thou me happily in a place secure." Such was the advice of ancient India. Pope Francis recently announced that the world has to take cognizance of Climate Change and to protect Earth from its ravages. UK's Prince Charles is unveiling a plan to fight Climate Change. "Climate health and biodiversity are essential to our survival" Charles says.

Many leaders call for solidarity to minimise ecological disturbances and create smarter technologies. PHCC members support alternative technologies, and we pray that the Government of India and the Ministry of Climate Change will utilise the concept of carbon credits to go full steam ahead in converting the Nation from outdated technology and meet the world on the way forward.

Human rights around the world are meant to include the protection of future generations, which would indicate the "right" of a viable Home, and for Nature to breathe, and our cohorts on the Planet to exist and not just be pushed over the brink by our endless growth, which is to say, at the expense of Life itself.

PHCC encourages everyone to do their part at the polling booth and in personal life actually to mitigate threats to our fragile future.

The PHCC Annual Report

The outgoing Executive Committee of PHCC—constituted with the following office bearers and Executive Committee members—hereby submits its Report for the 35th year of functioning of the Palni Hills Conservation Council. The Executive Committee met seven times during the past year.

Emeritus President	Mr M S Viraraghavan.
President	Mr Mark Antrobus.
Vice President	Mr Madhu Ramnath (Projects).
Vice President	Mr V R Rajagopal Dorai Raja.
Secretary	Mr G Bala
Joint Secretary	Ms Janani Krishnamurthi.
Treasurer	Mr Sankar Chatterjee.
Executive Committee Members	Ms Pippa Mukherjee | Mr Clarence Maloney Mr George Roshan | Ms R Lekshmi Mr P Pandian.
Co-opted Members	Mr S Ramji | Ms Ameeta Chatterjee Mr Danish Khan | Mr Robin Vijayan (IIESR) Ms Krishna Bauer.
Life and Annual Membership	139

Upper Hill PHCC Activities

2000 m / 6000 ft

PHCC Kodaikanal Lake water testing is ongoing in selected areas. We find pollution potential from various land use patterns that determines quality of water. Kodaikanal has been given another reprieve this past year (2020) with strong late rains and, at the moment of writing, the Lake is at full capacity.

To the fore this year came the threat of *Salvinia molesta (kariba weed)",* a free-floating aquatic plant native to Brazil spread globally over the past half century and on the list of the world's most 100 invasive species. Kariba weed undergoes rapid vegetative reproduction and left untreated can cover water bodies with a thick mat of vegetation choking out air and sunlight. The Kodaikanal Municipality has dealt with this invasive water weed by simply scooping it up and tossing it aside, The threat is that remnants of the removed waterweed finds their way down to the huge Palar reservoir in Palani.

Lake management is the responsibility of the Kodaikanal Municipality, which produced a Detailed Project Report on the Lake. PHCC and others feel that this needs substantial revision as it leans towards so-called beautification rather than serious ecological maintenance of the Lake.

Due to Covid-19 PHCC online webinars were conducted around solid waste, which threatens to engulf us if we do not all take serious steps to alleviate the problem.

For the past twenty years PHCC has been monitoring Kodaikanal Lake water quality. Results from physical and chemical testing show that the Lake has been severely polluted in the form of quantum (siltation) and quality (eutrophication) due to anthropogenic activities. Eutrophication is excessive richness of nutrients in a lake or other body of water, frequently due to run-off from the land, which causes a dense growth of plant life choking off other species. Kodaikanal International School senior students' studies showed that the Lake has a very high antibiotic and antifungal resistance, an indicator of medical runoff due to desultory sewage arrangements for the Lake. At this alarming juncture PHCC urges Stakeholders to take serious action to preserve the Lake. Lake property owners to the Upper Lake View must share in accountability for the Lake, PHCC urges. There is a positive sign to bring the Lake under **National Lake Conservation Plan** which one hopes will control and amend impacts of harmful human activities. — **Concern is growing** amongst the Kodaikanal public of news stories about a mass of funds, possibly ₹100 crore,

assigned to "beatification" of the Lake. What needs to happen is a viable plan for either **sealed septic tanks for all the residences and commercial or a coordinated sewage system to direct waste away from the ground around the Lake.** PHCC activist Mr Clarence Maloney has created a Report on the Lake, which appears on our website under "Lake Update".

Kodaikanal waters impact people down in the Plains. There are plenty of opportunities for pollutants such as fertilisers, pesticides, mercury, and sediment to accumulate as the water travels downhill, it is vital to test the water at lower elevations in addition to testing it at the high-elevation Lake and Gymkhana marsh below commercial establishments and residences. In some countries there are schemes for the Plains to help support efforts in Watersheds to ensure clean water, we could imitate them here.

Report of PHCC Centres

Upper Hills Nurseries

2000 m / 6000 ft

Kodaikanal Nursery Centre and Office

Uppsala University (Sweden) environmental students Ms Anna Lindholm and Ms Carin Hayer sojourned with us early in 2020 to work on their master thesis in Environmental and Water Engineering in cooperation with PHCC. Their final work is entitled 'Implementation of Swedish Risk Assessment Guidelines in Kodaikanal, India' based on a study of the mercury impacts on the environment from the Kodaikanal Hindustan Unilever Thermometer factory which was shut down due to the efforts of PHCC and Greenpeace. The pandemic warnings cut short their stay as they evacuated to Sweden to be with their families—while they completed their report on remediation guidelines.

After twenty years the seriousness remains around the impacts of Pond's Unilever Mercury Thermometer factory, and the culpability of Unilever Plc who owned and operated a mercury thermometer factory in Kodaikanal for over a decade. No such industrial operations are to operate in a watershed. In 1987 Pond's corporation

Kodaikanal Lake by Jennifer Harris.

Kodaikanal Sholai Nursery Centre
Endhawin, Lower Shola Road, Kodaikanal.

Kodaikanal Sholai Nursery Centre
Endhawin, Lower Shola Road, Kodaikanal.

Community Water Testing Programme
Adukkam, Kodaikanal

Wild Foods NTFP Nursery and Research
Adukkam / Kuthiraiyar

Grow-Trees / PHCC Tree Planting Programme
Kuthiraiyar Dam - 2020

Tribal Community Wild Honey Collection
Kuthiraiyar

Black and Orange Flycatcher

Malabar Giant Squirrel

Father K M Mathew Environment Centre by Jennifer Harris.

bypassed Government rules in establishing a face powder factory: in reality, a defunct and banned manufacturing thermometer works exported from New York State, USA. PHCC raised the alarm of mercury dumping and with the leadership of Navroz Mody, President of PHCC and under pressure from Greenpeace the Tamil Nadu Pollution Control Board shut down its operations in March 2001. Factory workers were physically disabled due to a horrifying absence of safety measures. It took many years for Unilever to compensate workers. Ms Anna and Ms Hayer worked with PHCC records but due to the Covid lockdown they were unable to obtain samples from around the 8.5 hectare (21 acres) factory site still contaminated and continuously leaching into water and soil. PHCC plans to test for mercury in Kodaikanal this year. Their report was then guided in Sweden towards the remediation guidelines that ought to be followed in any responsible and scientific manner. Earlier tests found hotspots to be up to 50,000 times higher than background values in normal soil (i.e., hotspots of 200 to 500 mg/kg of mercury in soil). What's more, the illegal industrial site shares a boundary with forest meant to enjoy the highest level of protection in recognition of its ecological value under the Indian Constitution—forest now deemed part of the Kodaikanal Wildlife Sanctuary, which PHCC lobbied over years to have established.

PHCC was founded in 1985 to protect soil and water and to engage in reforestation. At high altitude native trees are called *sholai* from the Tamil for highly bio-diverse and endangered sub-montane tropical evergreen forests exclusive to the Western Ghats. The Pambar Sholai, furthermore, is situated where water from the mercury contaminated site drains into the Pambar forests, watershed for the Vaigai basin serving millions of consumers. After closure, Unilever obtained approval from regulatory agencies to clean up the site to a residential target level of 20 mg/kg of mercury in soil.

According to environmental scientists, this remediation target level and the remediation process proposed by Unilever consultants are substandard and unscientific. Ms Lindholm and Ms Hayer documented that this remediation exercise failed

to pass muster in the EU or the Netherlands where Unilever is headquartered. By sharp contrast, the site specific guideline values in soil ought to range from a maximum of 0.1-2.4 mg/kg, not 20 mg/kg! Assured of impunity for its actions Unilever has managed to override environmental laws based on the Indian Constitution.

Documents obtained under Right to Information Act, 2005, reveal that the Company carried out a three-month remediation trial without the required statutory licenses under Air (Prevention and Control of Pollution) Act, Water (Prevention and Control of Pollution) Act and Hazardous and Other Waste Rules, 2016. Unilever has failed to show that methodology adopted and assumptions made by it to arrive at the Site Specific Target Level, and the proposed remediation methodology and monitoring frameworks would pass scrutiny by Dutch regulators.

Hence it should bring its remediation proposal in line with the best international practice as laid out in Ms Lindholm and Ms Hayer's Report (available "Unilever Plant" at <www.palnihills.org>).

Students from the Kodaikanal community conducted research work with PHCC help. Ms Sushila Sahay, working on her KIS IB essay for 'Environmental Systems and Society' utilised PHCC records of water-testing from 1995 to 1999 to demonstrate 'The Impact of Seasonal Variations on Dissolved Oxygen Levels in Kodaikanal Lake'. She charted the dissolved oxygen levels (which indicate the "health" of a water body) showing that dissolved oxygen consistently declined after the high tourist seasons and rose again after the off-season.

"Limnologists who study the Kodaikanal Lake say that tourism could be a major reason for this decline." That related factors like agricultural run-off and warmer weather lead to a picture of uncontrolled tourism only creating an added negative impact on the Lake. Ms S Shruti—internship for her Masters in Social Work engaging with PHCC work with villagers (PHCC Adukkam)—around 'Open Defecation in Relation to Sustainable Development Goal 6'.

Her research with Christ (deemed) University, Bangalore highlighted complex problems for women around using neighbouring fields for open defecation and, in some cases, found

*resistance to the use of toilets by traditional choice. Ongoing education (as done by PHCC) as to risks to public health was key; harmful bacteria, intestinal pathogens and, what is crucial to pandemic awareness, viruses (corona, hepatitis etc) are spread to others via soil and water by open defecation.

The Kodaikanal Sholai Conservation Nursery at Amarville raised and distributed **1550** saplings of thirty (30) varieties of sholai (indigenous, avian and insect supportive) species to the local residents and institutions largely during the Covid-19 period itself. The PHCC Nursery at Amarville compound at Kodaikanal continues to concentrate on high-altitude sholai tree propagation and free distribution to schools in the area.

PHCC maintains a stock of above **5000** saplings. This year, due to last year's rains and higher forest fertility PHCC was able to glean more seed from more varieties of native trees and build up our nursery numbers. We appeal to members and well-wishers to support by volunteerism or direct funding this valuable ongoing project in tune with the TN Action Plan-2 of greening up the country. The Centre maintains two colonies of *Apis cerana indica* in Newton and Top Bar hives for demonstration, observation, and awareness programs of the Centre involve bees and world patterns of hive-loss due to climate change and aforesaid challenges of the pesticide - herbicide menace.

We had a very good response and high survival rate for the **walnut** *(Juglans regia)* saplings distributed in 2020. PHCC has a goal of promoting long-term walnut cultivation around Kodaikanal. Walnut cannot be understated in importance as a tree-based cash crop: walnuts are anti-inflammatory and said to have a higher Omega-3 content than fish!

Kodaikanal PHCC Office Staff: Mr S Antony, Mr M Sheriff, Mr M Kariyamal. Accountant: Mr A Suresh. Nursery Staff: Ms Y Suganthi, Mrs Pramila John and Mr John Peter.

We are happy to receive a new staff member **Ms W. Latha** who has been diligently organising all throughout the 2020 pandemic hard-copy thirty-five year PHCC archives in English and Tamil.

PHCC Pallangi Tree Centre

1800m / 5400ft

The Pallangi Tree Centre supported by PHCC Founding Member Ms Pippa Mukherjee maintains three bee colonies of *Apis cerana indica* in Newton hives for demonstration and observation purposes.

PHCC Pallangi Nursery supplied **3207** fruiting, flowering trees and sholai spe-cies to the community. The fruiting varieties (peaches, avocado) especially are prized by local farmers.

PHCC follows strictly organic methods of raising and maintaining saplings supplied to farmers and the residential community. Local farmers informed us that the PHCC fruit saplings have a very high (90%) success rate on their lands, we believe due to our organic methods. The standing stock of tree saplings is about **3500** with germination of around **3000** on the way.

The Pallangi Nursery is a useful and productive tree base for locals living in the villages around and is constantly stocked with plant cuttings of shrubs and trees grown in Ms Mukherjee's garden.

Pallangi Nursery Staff: Ms Bothuponnu. Supervisor, Mr S Antony.

Middle Hills Centres and Activities

1000 m / 3000 ft

PHCC Adukkam Resource Centre

Announcing PHCC Adukkam Internship Programme

PHCC Adukkam Centre is located in Adukkam village of the Palani Hills, about 25 kilometres from Kodaikanal, at an altitude of 900-1100 metres, in a coffee estate with tropical vegetation.

Adukkam Resource Centre and Nursery extends an invitation for learning and internship. The Adukkam Centre of the Palni Hills Conservation Council (PHCC) and the Non-Timber Forest Products Exchange Programme-India (NTFP, India) is now open

to an **Internship Programme**. The Centre hosts a wild-food garden and nursery, a nursery of useful native plants set in a surrounding forest.

The ethos of the PHCC Adukkam Internship Programme is to instil, and inculcate an ethic and understanding that encompasses a variety of subjects linked to contemporary environment and development. The subjects that to be taught—not in a classroom setting but outdoors and otherwise – will include the importance and relevance of uncultivated foods, aspects of tropical forestry, conservation and ecology, tropical forest botany and, of course, NTFPs and the extensive world within that theme, which includes a variety of allied subjects from value-addition to policy. This internship will inevitably embrace a glimpse of Adivasi life across India, which is in varying degrees so dependent on NTFPs. For interested students and visitors, language, linguistics, anthropology, health, water, and parameters for water quality can all be included as areas of discussion. Interns interested in avian life, insects and reptiles will find much scope in the PHCC Adukkam Centre environs.

Internship Functioning and Sessions

The latter half of the Southwest Monsoon and the beginning of the dry season is intended as the main learning period (July to September). Ideally, admission will be limited to two to three (2-3) interns at any period—to encourage peer group discussions and fieldwork—from the organisations / networks with whom the NTFP-EP India is familiar. Outside this specified period, interns and students can access facilities offered in Adukkam through prior appointment and availability of staff managing the garden.

Around the topic of wild foods and tropical forest botany there will be field-work and documentation. Field visits will focus on the ecology of the Palani Hills, the quality and condition of water in mountain streams and rivers and an understanding of complex ecological structures around the seemingly simple gravitational flow of water to the Plains.

Interns are expected and encouraged to indulge in hands-on

nursery and planting work, with documentation, observation, reflection, and question-asking. They are expected to cook and stay in the group they are with, and to engage in discussions with the people in the nearby village (translators will be assigned for Tamil) about community concerns and issues. Outside Adukkam, the areas available for field visits and in-depth learning are Kuthiraiyar (nursery and wild foods, hiking); Genguvarpatti (nursery techniques, tropical dry evergreen forest ecology); Kodaikanal (fresh water lake ecology, wetlands, high altitude nursery, grasslands and sholai); Adukkam (springs, wild foods, and library, coffee-estate and transition ecology).

Teachers / guides will be both in-house (the PHCC and the NTFP India) as well as from organizations with an expertise in subjects mentioned above. It is expected that interns can afford to spend time in Adukkam (1-3 months) and then return to their home organizations to resume work with new and added insights. As indicated, Adukkam internship will include visits to other centres and places within the PHCC Centres purview.

Facilities available: Place to stay, kitchen, water, electricity, library. Nearest towns: Periyakulam (24 km), Kodaikanal (26 km). Public transport: none. Taxis can be hired on request. Maximum interns at any time: three (3). *Welcome!!*

Adukkam Centre: Supporting Women to Restore Natural Water Resources: PHCC SWRN

PHCC SWRN Project covers the villages (1) Adukkam on the moffusal road to Periyakulam, (2) Thamaraikulam / Sambakadu and (3) Tribal Colony—in the Kumbakarai Watershed that feeds the Vaigai river basin that feeds the southern Plains. The SWRN Project engages grass roots efforts to lay the groundwork for further water conservation outreach. Two PHCC-trained women field-workers from Adukkam Panchayat interact with their own communities for research, discussion and awareness-raising on water sources. The importance of this work is underscored by the fact that a majority of avoidable illnesses globally are caused by polluted water.

Three thousand marsh plants of the PHCC Adukkam Nursery of

up to ten species known for their purifying and conservation qualities are maintained and replanted around water bodies by villagers. The 2019 Northeast Maha Cyclone damaged many streams and PHCC-developed springs. Once again (following 2018 NE Gaja Cyclone) many buried springs had to be reclaimed. Six streams and springs have been renovated by excavation and erosion protection replanting with the cooperation of the Forest Department and Adukkam Panchayat.

PHCC SWRN Project response continues to be very positive while PHCC staff and field workers' awareness-raising meetings in the target villages cover topics such as afforestation, re-vegetation, water conservation, public hygiene, climate change, and organic farming. PHCC conducts monthly water testing in fourteen parameters to be shared with Farming and Tribal communities. The dangers of pesticides and herbicides and their alternatives is especially discussed. The Adukkam Panchayat works with PHCC to protect water sources to maintain sustainability. Due to Covid-19 we are playing catch up on funding—for Grasslands Restoration and Endangered Native Tree seed collection. Adukkam received funding from People and Nature Fund. PHCC intends to joining a crowd-fund to promote its environmental activities.

PHCC SWRN Adukkam conducted Covid-19 socially-distanced workshops around water resource and wetland preservation, public hygiene while PNF funding was directed to Covid-relief. PHCC staff and members distributed rice, dhal, oil, spices, sugar, tea for home usage for a month during the crisis period in the water-testing community and awareness meetings.

PHCC Adukkam Centre and Marshland Nursery Staff: Ms Saravana Devi, Ms Nayaki. Supervisors, Mr S Antony and Mr M Sheriff.

Plains Centres Activities

Sea Level

Father K M Mathew Environment Centre

Genguvarpatti / Kamakapatti Law's Ghat Road
Precipitation 2019-2020: 692.5mm

In our 35th year PHCC Father Mathew Centre distributed **9706** seedlings to farmers and the wider community. PHCC has a longstanding association with GROW-TREES promoting tree planting all over India. In 2019 GROW-TREES sponsored a planting program at Manjalar Dam, which involved PHCC planting **7500** indigenous evergreen trees around Manjalar Dam below Thalaiyar (Rattail) Falls.

PHCC supplied 7500 native seedlings to SEEDS TRUST in Ayyalur in 2019 for reforestation in the Slender Loris Habitat Restoration Project.

K. M. Mathew Environment Centre completed long-needed repair work with new roofing thanks to assistance from Private Donors. In the Non-Timber Forest Products (NTFP) project wild food species are raised at the Centre: twenty (20) types of wild yam and other varieties of edible wild species are maintained at the Centre for research into genetic viability for cultivar breeding and cultivation techniques. Seventy (70) native tree saplings of different varieties were distributed gratis for planting by the students on "Tree Day" to G. Kallupatti Hr. Sec. School in Theni District. — PHCC engaged students in Youth Awareness workshops to explain the value of afforestation and importance of medicinal plants and apiaries (bee cultivation) to the environment.

Wild Organic Honey Sales Centre stocks rare *Apis dorsata* wild honey, Palni Hills' pepper, shade coffee, delicious pickles, organic, lotions and creams. PHCC supplied a sewing machine and equipment for cottage industry to the community women for community financial improvement.

Optometrist Mr Sivakumar conducted PHCC Eye Camps in Kodaikanal, Adukkam and Genguvarpatti / Kamakapatti. Mr Sivakumar tested participants' eyesight and donated corrective eyeglasses to community members in need. Sudar Foundation, Madurai brought High School students for an exposure visit, PHCC providing training to them for nursery, maintenance and planting methodologies.

Fifteen graduate students from the Andipatti Sri Krishna Agricultural College (Theni Dt) participated in a twenty (20) day

internship. This was divided between hands-on experience and work at the PHCC Father Mathew Centre and the PHCC Kodaikanal Centre. The graduate students gained firsthand knowledge in nursery work, bee-keeping, and Watershed management related to PHCC activities.

The PHCC Butterfly Garden at the Fr Matthew Environment Centre is maintained on the western side of the campus with sprinklers and food plants for Lepidoptera research.

PHCC Arboretum at Kamakapatti, Fr Matthew Centre, is rich with native trees acting as a centre for Handbook Distribution on public awareness of Watershed resources. More than a hundred species of native trees, with new varieties added yearly, are labelled with descriptions of their uses and history for research and education.

Fr Mathew Centre Apiary Project. The villages of Ayyalur taluk (from the Slender Loris Project areas) visit the PHCC Centre to study beekeeping: how to raise bees and handle bee hives up to the harvesting of honey. The Centre maintains thirty bee hives; experts from PHCC, Mr Kariyamal and Ms Selviswari, instruct the Ayyalur villagers about bees and honey for future income development tied to organic practices in the area.

PHCC Staff at Fr Matthew Environment Centre. Supervisor, Mr R Jayaram. Group leader, Ms Selviswari.

Kuthiraiyar Tree Growing Centre

Next to Kuthiraiyar Dam, nr Palani

Twenty (20) Tribal Community families were engaged on a day-to-day basis during the two-month Tree Planting Programme process. Thirty (30) acres were targeted for the planting of 10,000 tree saplings. A minimum of one metre (3ft) in height for healthy saplings was required to maintain a superior survival rate. Most importantly, locals are involved in post-plantation maintenance intrinsic to the Programme.

10,000 tree saplings from Kuthiraiyar and other nurseries were planted in around thirty (30) acres at Kuthiraiyar Dam as part of

the PWD project of re-wilding reforestation in Kookal-Kuthiraiyar Block. These include tamarind and other trees appropriate for avian restoration. Along with native trees like Terminalia bellirica (thanri-kay) and Emblica officinalis (amla) for Ayurvedic triphala churna; one silk cotton species was also included. The PHCC NTFP Project around wild foods is maintained at Kuthiraiyar with around fifteen species of yam (Dioscoreaceae) collected and maintained by our Tribal colleagues.

GROW-TREES / PHCC Tree Planting Programme in 2019 and 2020 was successfully conducted as an exercise in **re-wilding** in PWD "wasteland" around Kuthiraiyar Dam (West of Palani Town) abutting the Reserve Forest in the Palani Hills northern slope foothills, and located at the border of the IGWS: Anaimalai Tiger Reserve.

Habitat loss due to degradation and deforestation in recent times is a major conservation issue for the region. GROW-TREES / PHCC Tree Planting Programme serves to protect and nurture flora and fauna of forest and grass-lands. The target Area of thirty (30) acres under the stewardship of the Public Works Department (PWD) has been despoiled over decades down to low weeds and small bushes from its once pristine forest.

The soil is red and fertile and cries out for re-wilding. The Project Area next to the Reserve Forest is an ideal habitat for our endangered Indian elephant and endemic and endangered Nilgiri tahr at the fringes of the Anaimalai Tiger Reserve. The Programme Area possesses a vital corridor and hunting ground for the endangered Bengal tiger and the Indian leopard; other mammals include near-threatened Indian pangolin, vulnerable gaur, sambar deer, Nilgiri langur, rusty-spotted cat, sloth bear, Indian giant squirrel, wild dog, jackal and Malabar gray giant squirrel amongst others.

The GROW-TREES / PHCC Tree Planting Programme surroundings next to the Kuthiraiyar Dam possesses high avian diversity. Some amongst 250 species identified in the Tiger Reserve and confirmed in Kuthiraiyar by PHCC birder Mr Satheesh Muthu Gopal are ibis, owl, tern, lapwing, hornbill, jacana, fly-catcher,

cattle egret, plover, swift, sandpiper, stone curlew, warbler, water-hen, spoonbill, drongo, robin, magpie robin, pied shrike, and reef egret. Amphibians and reptiles include rare endemic forms like the elusive purple frog, thin legged leaping frog, Anaimalai flying frog—while reptiles include the endangered Indian rock python, King cobra, forest lizards and many others. 315 species of butterflies belonging to five families have been identified in the hills next to the re-wilding site.

Hence many varieties of mammals, reptiles, snakes, amphibians, insects and pollinators are to be benefitted from this effort over thirty acres. The many-layered aspects of tree-life from shade delivery to soil-interaction support wildlife in regulating the ecosystem and its services through this re-wilding. Stakeholder families comprise small Tribal communities, small-scale farmers and daily-wage workers. Locals are dependent on collecting non-timber forest products (NTFP) from the Kookal-Kuthiraiyar Forest and Grassland slopes; we want to point out that regeneration of above-soil animals and subsoil microbial life links with wild foods and direct engagement by locals to improve the sensitive economy with enhanced forest-based livelihood options.

Awareness: PHCC conducted awareness workshops to local communities on the significance of environmental conservation and sustainable development by involving more and more folks in conservation action. Implementing the Tree Planting Programme involves such workshops to sensitise communities to the value of the natural world to their needs and humanity at-large, to understand re-wilding for its positive impacts on weather and water stresses; also the vital importance of curtailing illegal wildlife trade—which makes us all vulnerable to viral epidemics as has been warned of by epidemiologists worldwide who say "Leave Nature alone!"

Nursery Raising: for the past thirty (30) years PHCC has maintained a Forest Tree Nursery at Kuthiraiyar Dam. PHCC has great expertise in arboreal cultivation. For GROW-TREES / PHCC Tree Planting Programme PHCC nursery workers raised 10,000 saplings of twenty five (25) species for the Project implementation.

Key members of the local Tribal Community are highly invested in Tree Planting work and PHCC Nursery activities, of a direct benefit economic and cultural; tree raising and planting reinforce and renew bonds with Nature even as benefitting directly through wages.

Planting Work: GROW-TREES / PHCC Tree Planting Programme was conducted during the rainy season from October 2020 to mid-December 2020. This year (2020) during the tree-planting season we were blessed by ample rain so the success rate looks to be quite positive. To make up for the previous year (2019) sapling mortality in the field we replanted them this year.

Kuthiraiyar Staff: Mr S Krishnamurthy, Ms G Mariammal. Supervisor, Mr M Kariyamal.

Environmental Books by PHCC Members

Madhu Ramnath and Ramon Razal: *Wild Tastes in Asia: Coming Home to the Forest for Food,* NTFP Exchange Programme, 2020 Illus. <tinyurl.com/wildtastes>

Madhu Ramnath: *Woodsmoke and Leafcups: Autobiographical Footnotes to the Anthropology of the Durwa people*, Harper Litmus, 2016. Illus.

Madhu Ramnath: *A Nursery Manual,* Kodaikanal: PHCC, 2019. Illus.

Pippa Mukherjee, *Flora of the Southern Western Ghats and Palnis,* New Delhi: Niyogi, 2016. Illus.

Pippa Mukherjee, *Trees of India,* New Delhi: WWF-OUP Nature Guides, 2014. Illus.

Robert Stewart, *Meet the Trees of Kodaikanal, An Island in the Sky*, ed Jayashree Kumar, Kodaikanal: INTACH, 2019. Illus.

Satheesh Muthu Gopal, *Yarukkanathu Bhumi?—Earth, for Whom?* Chennai, Crownest, 2018, illus. <http://ivansatheesh.blogspot.com/2019/08/blog-post.html?m=1>

PHCC's Invaluable Donors

Both ENDS, The Netherlands. **GROW-TREES,** Mumbai.

People and Nature Fund (PNF): Keystone Foundation, Kotagiri.

NTFP, Non-Timber Forest Products Exchange Programme Asia.

Ms Pippa Mukherjee, INDIA. **Mr Sateesh Mutthugopal,** INDIA.

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"Stay Safe! Eat Healthy! Give back to Nature!"

PHCC President - Mark Antrobus, <*vibusgo@gmail.com*>
Kodaikanal, January 26, 2021

PHCC Tree Nursery, Father K M Mathew Environment Centre Gengavarpatti

PALNI HILLS CONSERVATION COUNCIL
(Regd. Soc. 88/1985)

Palni Hills Conservation Council

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Kuthiraiyar Dam - 2020, GROW-TREES & PHCC Tree Planting Programme