

ACE-NC Paper 1/2021
For discussion on 15 June 2021

Implementation of the Incense Tree Species Action Plan

PURPOSE

This paper updates Members on the implementation of the Incense Tree (*Aquilaria sinensis*) Species Action Plan 2018-2022 (SAP)¹ by the Agriculture, Fisheries and Conservation Department (AFCD) to conserve Incense Tree (土沉香) in Hong Kong.

BACKGROUND

Biology and Ecology of Incense Tree

2. Incense Tree is a native tree species of the plant family Thymelaeaceae (瑞香科). It is an evergreen tree of 6 to 20 m tall with smooth bark in light grey or dark grey. Leaves are alternately arranged and obovate with slender lateral veins, flowers are small, fragrant and yellowish green and fruits are hanging down woody capsules. (**Fig. 1 a-c**).

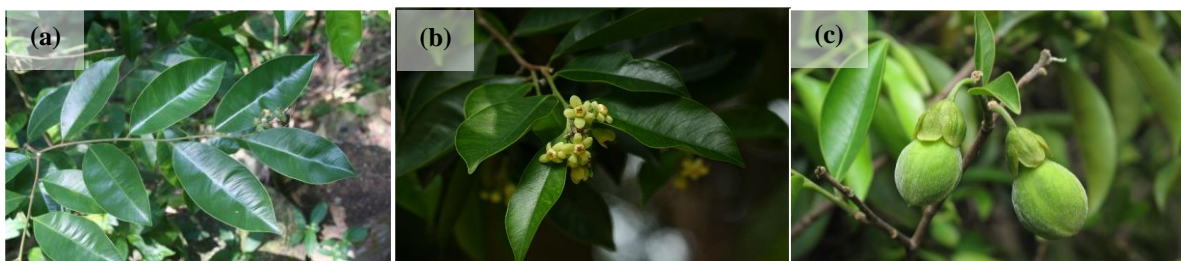


Fig. 1. The appearance of (a) the leaves, (b) flowers, and (c) fruits of the Incense Tree.

3. All trees of the genus *Aquilaria* produce a dark aromatic resin at wounds as a reaction against fungal infection. Sections of tree trunks or branches that contain patches of fragrant, resinous wood enter into the trade under the name “agarwood” (沉香).

¹ The SAP is available on AFCD’s website:

https://www.afcd.gov.hk/tc_chi/conservation/con_flo/con_flo_con/files/Incense_Tree_SAP_2018_2022.pdf

香木)². The balm (resin) produced and accumulated from the wood is traditionally utilised as a valuable Chinese medicine called “Chen Xiang” (沉香), which used to be derived mostly from the species *Aquilaria malaccensis* (香樹) and imported from the Asian tropics. Owing to the depletion of the supply of such quality products, the resin from the local *A. sinensis* has been used as a substitute.

4. The high-priced agarwood harvested from Incense Trees are mainly used as sculpting materials and perfume ingredient in the Mainland. Due to their high commercial value, many Incense Trees in southern Mainland were cut down, and their habitats were damaged during the harvesting of agarwood, which led to a sharp decline in the wild population.

Protection of Incense Tree

5. Incense Tree is listed as “Vulnerable” in the International Union for Conservation of Nature (IUCN)’s Red List of Threatened Species and in the “Threatened Species List of China’s Higher Plants”. The genus *Aquilaria* is listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and thus the Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586), which is the local legislation that gives effect to CITES. Incense Tree is also listed on the “List of Wild Plants under State Protection (Category II)” in the Mainland, and is included in the book “Rare and Precious Plants of Hong Kong”.

6. This species was once widely planted in Hong Kong for producing the raw material of incense, which was exported to the Mainland, Southeast Asia and Arabia, making it a common species widely distributed in lowland areas in Hong Kong and is particularly abundant in mature woodlands behind rural villages. The Incense Tree population in Hong Kong is believed to be one of the best remaining healthy populations of this species. However, due to the increasing demand for agarwood in the Mainland and the depletion of wild specimens in southern Mainland, an increasing trend of illegal felling of this species in Hong Kong was observed in the past two decades. Cases of illegal felling were reported across the territory, including Sai Kung, Clear Water Bay, Sha Tau Kok, Tsuen Wan, Tai Po, Lantau Island, Lamma Island and Hong Kong Island, etc.

7. To strengthen conservation measures and enhance the long-term viability and sustainability of the local Incense Tree population, the AFCD formulated the SAP in 2018 with the advice from the Nature Conservation Subcommittee (NCSC) of the Advisory Council on the Environment (ACE), relevant government departments, non-government organisations (NGOs) and local communities. Prior to 2018, the conservation measures of Incense Tree had also been reported to the NCSC in 2013 and 2016.

² In order to produce more agarwood for subsequent collection, poachers would create multi wounds on the trunk of the Incense Tree and come back to collect the agarwood by felling and chopping the trees into sections. Incense Trees with signs of man-made wounds are targets of close monitoring and further investigation.

IMPLEMENTATION OF THE SAP SINCE 2018

8. Under the SAP, there are nine Actions specified to enhance protection for the Incense Tree, namely, risk-based patrol, surveillance in the wild, enforcement facilitation measures, collaboration with Mainland authorities, protection of high-risked specimens, artificial propagation and replanting, scientific studies, long-term monitoring, as well as publicity and education. Since the formulation of the SAP in 2018, the AFCD has been implementing these measures in the SAP accordingly.

Action 1: Risk-based Patrol

9. The AFCD has been conducting regular patrols in Country Parks and Special Areas to deter illegal activities. In response to the increased occurrence of illegal felling of Incense Trees outside Country Parks and Special Areas in recent years, the AFCD has set up an Incense Tree Patrol Team (the Patrol Team) to step up patrol at the black spots of illegal tree felling.

10. The AFCD also conducted joint operations with the Police from time to time to detect illegal Incense Tree felling activities, and endeavoured to enhance liaison and cooperation with concern groups and villagers living near Incense Trees for intelligence gathering and reporting of any illegal felling activities. When signs of irregularities are reported or found, the Patrol Team will promptly report the case to the Police for further investigation or surveillance.

11. To support formulation of better protection measures of the Incense Trees in Hong Kong, the AFCD has also been conducting a systematic territory-wide survey on the distribution of Incense Trees outside Country Parks and Special Areas. The survey records would enhance knowledge of the species and assist in the formulation of the risk-based patrol strategy.

Action 2: Surveillance in the Wild

12. To facilitate the gathering of crime evidence and swift enforcement against illegal felling of Incense Trees in the countryside, the AFCD has been conducting a pilot scheme using Infrared Sensor Camera Traps (IRSCTs) to monitor Incense Trees at strategic locations. The IRSCTs are triggered by moving heat objects, such as human activities close to the target tree, and will take multiple pictures instantly. The pictures taken will be sent immediately to the 24-hour control room of the security contractor hired by the AFCD. The control room would check the pictures and report to the AFCD and the Police if suspected illegal activities are found. To facilitate swift enforcement actions upon the detection of illegal felling activities by the IRSCTs, the AFCD and the Police have developed an operation protocol. Since the deployment of IRSCTs in January 2017, a total of 38 suspicious or confirmed criminal activities have been detected. In March 2018, after receiving signals from the IRSCTs, the Police arranged a timely follow-up and caught a suspect red-handed for harvesting agarwood.

Action 3: Enforcement Facilitation Measures

13. To combat illegal activities with respect to Incense Trees, enhanced enforcement actions are being undertaken by the Police, Customs and Excise Department (C&ED) and the AFCD. The Police conducts criminal investigations into all suspected cases of illegal felling of Incense Trees while the AFCD renders assistance in inspecting the exhibits, providing expert advice and serving as an expert witness on identifying the trees and agarwood concerned in court proceedings. In view of the seriousness of the offence committed and as a deterrent against illegal activities, offenders involved in illegal felling of Incense Trees are mainly prosecuted under the Theft Ordinance (Cap. 210), which carries a maximum penalty of imprisonment for 10 years. The prosecution figures in the past eight years are at **Annex 1**.

14. In addition, the import, export and re-export of agarwood specimens are regulated under Cap. 586³. The AFCD enforces the import and export/re-export control of Cap. 586 in collaboration with the C&ED. The two enforcement agents conduct joint operations at export control points from time to time to combat the smuggling of endangered species, including agarwood. In addition, as the fragrant nature of agarwood may serve as a clue to allow detection by trained dogs, the AFCD has trained quarantine detector dogs to facilitate the detection of agarwood smuggling at control points. The numbers of illegal imports and exports of agarwood over the past eight years are at **Annex 2**.

Action 4: Collaboration with Relevant Mainland Authorities

15. The AFCD has maintained close collaboration with relevant Mainland authorities for intelligence exchange and to combat the smuggling of items derived from Incense Trees. A three-day Incense Tree Enforcement Training Workshop was hosted by the AFCD in July 2018 to facilitate capacity building, intelligence exchange, and further collaboration between Hong Kong and the Mainland in combating illegal felling and smuggling of Incense Tree. In November 2019, the AFCD officers visited Guangzhou and Dongguan to meet with the Mainland government officials and researchers and to learn more about the latest development of the agarwood industry and market there. Further exchange with Mainland authorities will resume subject to the COVID-19 pandemic situation.

Action 5: Protection of High-risk Specimens

16. Large and mature Incense Trees are more likely to form resins (i.e. agarwood), thus are more often the targets of the poachers. In order to protect these important Incense Tree specimens from felling or vandalism, the AFCD has been installing different types of tree guards throughout Hong Kong (**Fig. 2**). At present, three types of tree guards are being deployed by the AFCD. The Bamboo Mesh Fence (BMF)

³ Under Cap. 586, shipments of agarwood specimens must be accompanied with a valid CITES permit and be inspected by an authorised officer upon landing or before being exported/re-exported from Hong Kong, unless specific criteria for exemptions are met. The maximum penalty for violating the above licensing requirements is a fine of \$1 million and imprisonment for seven years.

was the first generation of tree guards but is being phased out as it is less durable and effective in protecting the trees. The Metallic Tree Guard (MTG), which is made of metal frames and more robust and tolerant to mechanical damage, was then adopted. The latest tree guard deployed was the Metallic Tree Protective Device (MTPD). With a height of 3.5 m, it is designed to prevent poachers from climbing inside the tree guard and damaging the protected tree. To date, over 190 tree guards have been installed to protect the Incense Trees from damage or illegal felling activities.



Fig. 2. The three types of tree guards installed by the AFCD. (a) Bamboo Mesh Fence (BMF), (b) Metallic Tree Guard (MTG), and (c) Metallic Tree Protective Device (MTPD).

Action 6: Artificial Propagation and Replanting

17. The AFCD has stepped up the extensive planting of Incense Trees in Country Parks to compensate for their loss due to illegal exploitation in the past years. Since 2009, about 10 000 seedlings of *A. sinensis* have been produced and planted every year to assist in the re-stocking of this species in Hong Kong.

Action 7: Scientific Studies

18. The AFCD encourages research institutions to conduct research studies to enhance conservation of the species and facilitate law enforcement relating to Incense Trees. For example, the AFCD commissioned the Chinese University of Hong Kong (CUHK) to use a genomics approach to investigate the population structure of the Incense Trees in Hong Kong and identify genetic markers to differentiate different Incense Tree populations. The AFCD also supported a research project funded by the Environment and Conservation Fund in molecular authentication of endangered timber samples and donated forfeited/surrendered products of *Aquilaria* sp. to the institution for study.

Action 8: Long-term Monitoring

19. Based on the information gathered from the patrols and surveys by the Patrol Team, the AFCD has identified several strategic locations of high Incense Tree density for regular monitoring. High-precision Global Positioning System is deployed to

record the locations of the Incense Trees, and their conditions over time are also recorded. The data gathered were then integrated and analysed in the Geographic Information System. The long-term monitoring could provide invaluable information about Incense Trees in Hong Kong and assist the formulation of the risk-based patrol strategy.

Action 9: Publicity and Education

20. The AFCD has continued to promote Incense Tree conservation in its regular publicity works. Agarwood specimens are displayed in the AFCD Endangered Species Resource Centre. Posters have also been displayed at various visitor centres, information boards of country parks and control points. To raise public awareness on Incense Tree conservation, the AFCD has engaged the media and the social media to disseminate the information to the public. For example, we engaged Goldthread (the online magazine of the South China Morning Post) to produce a video interview about Incense Tree conservation in 2018. We also made promotional videos and Facebook posts related to Incense Tree and its related offences on the AFCD's Facebook page. To support education and publicity programmes related to Incense Tree, the AFCD has partnered with the Shiu-Ying Hu Herbarium of CUHK to organise the "Botany STEAM" education programme to promote conservation on local rare/protected plants, including Incense Trees, in local primary and secondary schools since 2019. Incense Tree seedlings/saplings have also been provided to the Urban Renewal Authority for planting at public open spaces at their redevelopment sites for conservation and education purposes.

REVIEW OF THE SAP

21. In general, the conservation measures in the SAP are considered effective in conserving and protecting the Incense Trees. Important Incense Tree specimens are well protected by the tree guards, and the risk-based patrols and surveillance by IRSCTs are considered effective in deterring illegal tree felling activities. Territory-wide surveys, long term monitoring of strategic locations and scientific studies have enhanced our knowledge of Incense Trees in Hong Kong. Collaboration with other enforcement agents (the Police and C&ED) and Mainland authorities, liaison with stakeholders and local residents as well as various education and publicity programmes have also contributed to the concerted efforts of the community in the conservation of the species.

22. As stated in the SAP, relevant stakeholders, including the government's enforcement agents and the NGOs, will be invited to review the present SAP through the platform of the Inter-departmental Task Force on Wildlife Crime by the end of 2022.

ADVICE SOUGHT

23. Members are invited to note the current situation of Incense Trees in Hong Kong and comment on the implementation of the SAP.

Agriculture, Fisheries and Conservation Department
June 2021

Annex 1

Number of criminal cases involving Illegal Felling of Incense Trees in 2013 – 2020

All criminal cases involving illegal felling of Incense Trees were handled by the Police mainly under the Theft Ordinance (Cap. 210), as well as the Summary Offences Ordinance (Cap. 228) or the Crimes Ordinance (Cap. 200). Information on recent cases and prosecution actions is summarised in the following table.

Calendar Year	Number of				Maximum Penalty (imprisonment / months)	Quantity seized*/ Number of Trees (Felled)
	Cases	Persons arrested	Prosecutions	Persons Convicted		
2013	96	41	21	18	45	133.5 kg / 168
2014	134	65	26	26	55	283.1 kg / 240
2015	120	16	5	3	35	106.6 kg / 249
2016	54	22	8	8	30	216.7 kg / 172
2017	53	9	1	1	30	94.4 kg / 102
2018	41	1	0	0	N/A [^]	5.1 kg / 78
2019	32	0	0	0	N/A [^]	0 kg / 53
2020	13	1	0	0	N/A [^]	9.4 kg / 26

[^] No prosecution was instituted.

* The quantity of agarwood seized on the persons arrested.

Annex 2

Number of Illegal Imports and Exports of agarwood in 2013 – 2020

The number of illegal imports and exports of agarwood prosecuted under Cap. 586 over the past eight years are tabulated below.

Calendar Year	Number of		Penalty	Quantity of seizure (kg)
	Cases	Prosecutions	Maximum	
2013	9	0	Not applicable	331
2014	29	2	Imprisonment of 10 months	1,035
2015	13	1	A fine of \$40,000	184
2016	11	2	A fine of \$21,000	134
2017	12	4	Imprisonment of 6 weeks	414
2018	41	8	Imprisonment of 24 months	244
2019	27	8	Imprisonment of 24 months	66 and 17 live plants
2020	33	1	A fine of \$5,000 [#]	75

[#] There was only 1 case of successful conviction.

* The case also involved the smuggling of 0.01 kg worked ivory.