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考察时间和线路安排

Timing and Routing Arrangement

一、考察时间 Timing

9月10日

上午 8:30—13:00

下午 14:00—18:30

September 10th

8: 30-13: 00

14: 00-18: 30

9月16日

上午 8:30—13:00

下午 14:00—18:30

September 16th

8: 30-13: 00

14: 00-18: 30

二、出发地点 Rally Point

鄂尔多斯市党政大楼东侧停车场

Parking Lot on the east of the Party Building, Ordos

三、考察线路 Routes

1 号线路：毛乌素沙地伊金霍洛旗综合治理考察

Route 1: Field trip of the Comprehensive Treatment of Maowusu Sandy Area in EjinHoro Banner

考察内容：以伊金霍洛旗为代表的毛乌素沙地综合治理。总行程约 173 公里，用时约 4 小时 30 分。本条考察线路停车 3 次，现场考察 3 个点。

Contents for Field Trip: The comprehensive treatment of Maowusu Sandy Area in EjinHoro Banner. The total journey is about 173 kilometers and takes about 4 hours and 30 minutes. We will stop for three times, with three Field Trip sites.

2 号线路：库布其沙漠达拉特旗综合治理考察

Route 2: Field Trip of the Comprehensive Treatment of Kubuqi Desert in Dalad Banner

考察内容：以达拉特旗为代表的库布其沙漠综合治理。总行程约 234 公里，用时约 4 小时 30 分。本条考察线路停车 3 次，现场考察 3 个点。

Contents for Field Trip: The comprehensive treatment of represented by Kubuqi Desert in Dalad Banner. The total journey is about 234 kilometers and takes about 4 hours and 30 minutes. We will stop for three times, with three Field Trip sites.

考察点简介

Introduction of the Sites

一、1 号线路考察点 Field Trip Sites in Route 1

(一) 阿鲁图作业区 (停留约 20 分钟)

Alutu Operating Area (Stop for about 20min)

阿鲁图作业区地处毛乌素沙地腹地，伊金霍洛旗西南部，为国营新街治沙站八个作业区之一，总面积 2050 公顷。

The Alutu Operating Area, located in the hinterland of the Maowusu Sandy Area in the southwest of the EjinHoro Banner, is one of the eight operating areas of the State-Run Sand Control Station with a total area of 2050 hectares.

上世纪五十年代，这里全部为流动和半流动沙丘。治沙站成立后，通过采取人工设置沙障，撒播杨柴、籽蒿等方式，逐渐恢复地表植被。上世纪 70 年代末，利用国家“三北”防护林体系建设工程，在作业区外围建设以杨树为主的乔木防护林带，在作业区内洼地背风坡栽植杨树、柳树，迎风缓坡地扦插沙柳，结合播撒杨柴、花棒、柠条等方式，全面综合治理，取得显著成效。近年来，作业区在不破坏原有植被的基础上，通过在疏林带间栽植樟子松、灌木平茬等方式，对防护林进行改造提升。同时，充分利用平茬沙柳条，开展手工柳编、饲料加工、沙柳重组木生产等沙产业开发，提高资源利用效率。

In the 1950s, there were all moving and semi-moving dunes. After the establishment of Sand Control Station, it gradually restored surface vegetation by setting artificial sand barrier, spreading *Hedysarummongolicum* and round head wormwood etc.. In the late 1970s, with the introduction of the National "Three Norths" Shelterbelt Forest Construction Project, the poplar-based arbor shelterbelt was built outside the operating area, while the poplar and willow was planted on the leeward slope of the marsh land in the operating area and *Salix mongolica* was planted on the windward slope. Combined with spreading *Hedysarummongolicum*, *Hedysarumscoparium*, *Caraganamicrophylla*, etc., the comprehensive treatment work obtained remarkable results. In recent years, following the principle of protecting the original vegetation, the operating area improved ecological environment by planting *Pinussylvestris* and brush cutting among the sparse forests. At the same time, by full use of *salixmongolica*, they carried out sand industry development including handmade wicker products, feed processing, *salixmongolica* Scrimber (recombinant wood production), in order to improve resource utilization efficiency.

(二) 小霍洛作业区和沙柳综合加工利用 (停留约 20 分钟, 此处安排茶歇)

XiaoHoro Operating Area and Comprehensive Processing and Utilization of *Salix Mongolica* (for about 20min with tea break)

小霍洛作业区是霍洛林场五个作业区之一, 成立于 1958 年, 总面积 667 公顷。作业区地处毛乌素沙地东北边缘, 当时风沙危害十分严重。通过采取人工沙障、种草植树等措施, 逐步恢复林草植被, 沙地得到有效治理。1972 年开始引进樟子松, 通过三十年的育苗和治沙造林试验, 樟子松在小霍洛作业区长势良好。2000 年开始, 作业区先后实施了三北防护林、京津风沙源、退耕还林等国家重点工程, 樟子松造林推广面积达 562 公顷, 并带动了樟子松育苗产业的发展, 伊金霍洛旗樟子松育苗总量达 2.16 亿株, 农牧民每年来自育苗产业的户均收入 1 万多元。现在樟子松已成为毛乌素沙地造林的主要乔木树种, 并在内蒙古中、西部地区治沙造林中大面积推广。

The XiaoHoro Operating Area is one of the five operating areas in the Horo Forestry Station, established in 1958 with a total area of 667 hectares. The operating area was founded in the northeastern edge of Maowusu Sandy Area, when the wind and sand damage was very serious. Through the use of artificial sand barrier, planting trees and other measures, the forest and grass vegetation was gradually restored, and the sand was effectively managed. In 1972, the *Pinussylvestris* was introduced. After three decades of seeding and desertification combating afforestation test, *Pinussylvestris* grows well in the XiaoHoro Operating Area. Since the beginning of 2000, the operating area has implemented the "Three Norths" Project, the Beijing-Tianjin Sandstorm Source Project, and Returning degraded Farmland into Forests as well as other national key projects. The afforestation areas of *Pinussylvestris* Linn. var. *mongolica* cover 562 hectares, which promotes the development of forest nursery industry. The total amount of seedlings of *Pinussylvestris* var. *Mongolica* reaches 216 million, and the average income of farmers and herdsmen from the nursery industry is more than 1500 USD Dollar annually. *Pinussylvestris* has become the main tree species of afforestation in Maowusu Sandy Area and been widely promoted in desertification and afforestation in Inner Mongolia and western China.

鄂尔多斯现有沙柳面积 42 万公顷，伊金霍洛旗探索了以沙柳重组木为主的沙柳平茬物综合利用模式，即以沙柳枝条为原料，经过脱皮、碾压、切丝、改变特性、干燥等过程，压制成具有环保、耐腐蚀、耐高压、防水、防火等性能的沙柳重组木，作为绿色建材用于木结构式节能住宅、家具生产等领域，增加了农牧民收入，调动了农牧民参与防沙治沙和种植沙柳的积极性。

Ordos has an area of 420,000 hectares of *Salix mongolica*., EjinHoro Banner has explored the comprehensive utilization pattern of *Salix mongolica*, which mainly uses its branches. After peeling, rolling, shredding, changing the characteristics, drying and other processes, these branches will be pressed into Salix Scrimber with the environmentally friendly, corrosion-resistant, high pressure, waterproof, fire and other properties. They can be used as green building materials for wood-based energy-saving residential, furniture production and other fields. In this way, the income of farmers and herdsmen was increased, and the enthusiasm of farmers and herdsmen to participate in desertification control and cultivation of Salix was motivated.

（三）伊金霍洛旗防沙治沙项目区（停留约 20 分钟）

Project Area of Prevention and Control of Desertification in EjinHoro Banner (for 20min)

项目区位于成吉思汗陵周边，属固定、半固定沙地，周边土地沙化严重。2010 年，依托试验成功的樟子松造林技术，启动实施了防沙治沙项目区建设工程。通过在项目区内大面积推广沙地樟子松治沙造林，完成沙地治理 9667 公顷，在成吉思汗陵外围构建起了乔灌集合针阔混交的较为稳定的防护林体系。2015 年，以项目区为基础，建成了以人工林为主的沙地绿洲型国家森林公园，辐射带动周边造林绿化、生态旅游、种养殖业等产业的迅速发展，农牧民生产生活水平得到很大提升。

Located around the Genghis Khan Mausoleum, the Project Area is a fixed, semi-fixed sand, and its surrounding suffers serious land desertification. In 2010, relying on the success of the experiment of *Pinussylvestrisvar.mongolica* afforestation technology, this Area started the implementation of the Sand Control Project. By launching large area of sand control afforestation with *Pinussylvestrisvar.mongolica*, the sand control area reached 9667 hectares. An arbor-and-shrub mixed coniferous & broad leaved forest system outside of Genghis Khan Mausoleum was build. In 2015, based on the project area, the artificial forest-based sand oasis-type national forest park was built, and it led to the rapid development of surrounding afforestation, eco-tourism, aquaculture and other industries. At the same time, the production ability and living standards of farmers and herdsmen was greatly improved.

二、2 号线路考察点 Field Trip Sites in Route 2

(一) 响沙湾 (停留约 20 分钟)

Whistling Dune Bay Tourist Area(for about 20min)

响沙，意为带喇叭的沙丘。响沙湾因沙丘流动时会发出响声而得名。响沙湾坐落于库布其沙漠中段，黄河一级支流罕台川从它前面流过，属沙漠类自然风景区，总经营面积 2000 公顷，是集观光与休闲度假为一体的综合型的沙漠休闲景区。立足沙漠资源和蒙古族文化底蕴，从 1984 年起，响沙湾开始探索沙漠资源合理开发利用，现已发展形成以大漠观光和民族风情体验为主的生态文化旅游产业，吸纳当地百姓就业，增加农牧民收入。

"Whistling Dune" means a dune with a horn. The Whistling Dune Bay is named after the dunes make sounds. Whistling Dune Bay is located in the middle of the Kubuqi Desert and Hampshire River, the tributary of Yellow River, flows from its front. It is a desert natural scenic area and the integrated desert leisure area for sightseeing and leisure with the total operating area of 2000 hectares. Based on the desert resources and Mongolian cultural heritage, the Whistling Dune Bay has begun rational utilization of desert resources since 1984. At present, the eco-cultural tourism industry featuring desert sight-seeing and ethnic customs experience has come into being, which has created jobs for local people and increased the income of farmers and herdsmen.

(二) 达拉特旗沙柳综合加工利用（停留约 20 分钟，此处安排茶歇）
Comprehensive Processing and Utilization of *Salix Mongolica* in Dalad Banner (for about 20min with tea break)

达拉特旗探索了以沙柳刨花板为主的沙柳平茬物综合利用模式，即以沙柳枝条为原料，经过刨片、拌胶、热压、冷却、干燥等过程，压制成具有环保、结构细密、强度高、防潮、防腐、握钉力强等性能的沙柳刨花板，作为绿色建材被广泛应用于家具生产等领域。生产过程中产生的沙柳废料经过处理后用于培育食用菌，菌渣经高温灭菌后用于生产生物菌肥，提高了灌木平茬物利用效率，增加了木材供应和就业机会，提高了农牧民收入。目前，龙头企业东达集团年使用沙柳达 10 万吨，刨花板年生产能力达 10 万立方米。

The Dalad Banner explores the comprehensive utilization pattern of *Salix psammophylla*, which features in *Salix mongolica* shaving board with the environmentally friendly, fine structure, high-intensity, corrosion-resistant, waterproof, strong nail pull resistance and other properties. They can be used as green building materials for furniture production and other fields. The scrap produced is used to cultivate the edible fungus. After the high temperature sterilization, the fungus residue is used to produce the bio-bacteria fertilizer, which on the other hand improves the utilization efficiency of the shrub and increases the timber supply as well as employment opportunities, so the income of farmers and herdsmen increase, too. At present, the amount of *Salix mongolica* used by the leading enterprise Dongda Group annually reaches 100,000 tons, and the annual production capacity of shaving board touches 100,000 cubic meters.

（三）银肯塔拉综合治理工程区（停留约 20 分钟）

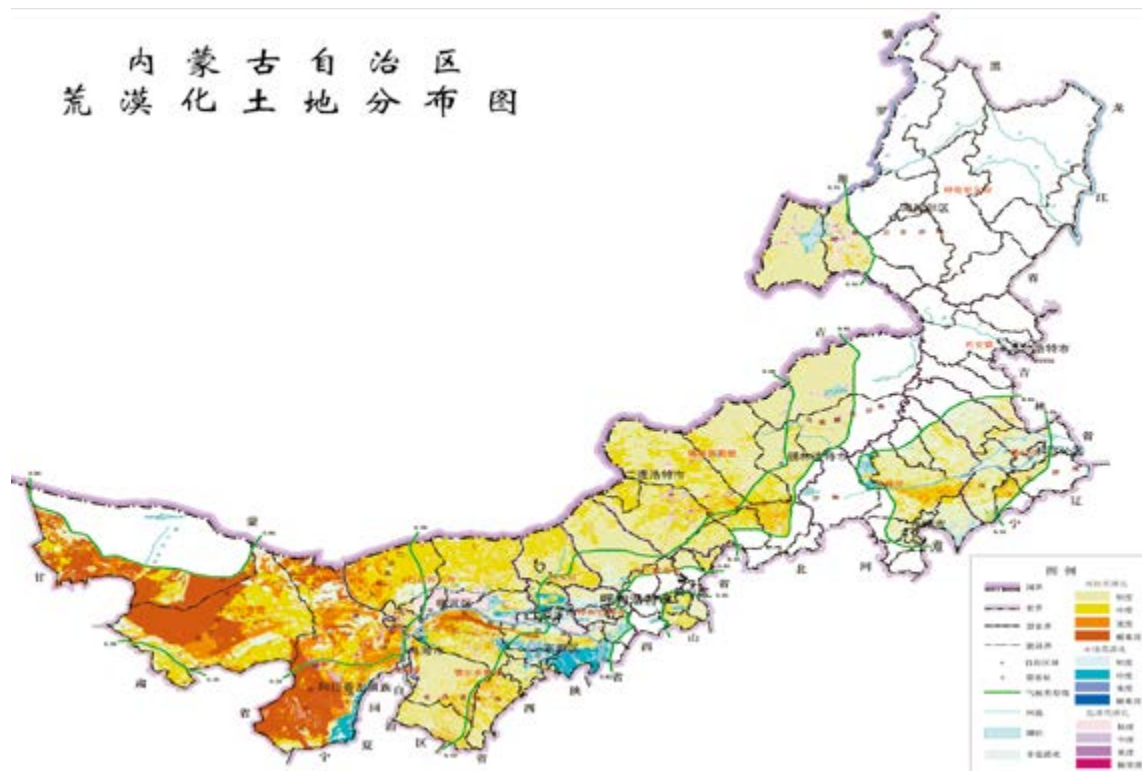
Comprehensive Treatment Project Area in Yinkentala(for about 20min)

银肯塔拉综合治理工程区位于库布其沙漠腹地，总面积 4000 公顷，均为高大而密集的流动沙丘，区域内保存有一处天然绿洲，面积约 200 公顷。从 2000 年开始，围绕天然绿洲保护，实施了综合治理工程。通过在工程区外围沙丘迎风坡和丘间低地栽植杨树的方式，建成了宽 2 至 3 公里的防护林带，阻止沙漠扩展；在天然绿洲周边，人工播撒杨柴、籽蒿，利用道路设置沙障固定流沙，沙障内栽植沙柳、柠条、杨柴等树种，扩大绿洲面积。目前，共设置不同类型沙障 700 公顷，累计治理面积 1800 公顷，示范带动周边地区治沙造林 6700 公顷，有效控制了风沙危害，保护了天然绿洲。

The Comprehensive Treatment Project Area in Yinkentala is located in the hinterland of Kubuqi desert, with a total area of 4000 hectares. There are mainly tall and dense moving dunes. This area preserves a natural oasis with an area of about 200 hectares. Since 2000, around the natural oasis protection, this area launched a comprehensive treatment project. By planting poplars on the dunes' windward slope and the lowland in dunes around the construction area, a shelterbelts with a width of 2 to 3 km was built to prevent the expansion of the desert; around the natural oasis were artificial *Hedysarummongolicums*; the oasis area was expanded by setting sand barrier along the roads to fix the dunes by planting *Salix mongolica*, *Caraganamicrophylla*, *Hedysarummongolicum* and other trees. At present, a total of 700 hectares of different types of protecting barrier was set. The cumulative treatment area reaches 1800 hectares, thus playing an exemplary and leading role in the surrounding sand control afforestation with an area of 6700 hectares, which effectively controls the desertification and protects the natural oasis.

内蒙古自治区荒漠化防治概况

Overview of Desertification Combating In Inner Mongolia Autonomous Region



内蒙古自治区是中国北方重要生态安全屏障，土地总面积 118.3 万平方公里，总人口为 2520 万人。全区以温带大陆性季风气候为主，降水量在 500–100 毫米之间，多集中在夏、秋季节，85% 的地区处于干旱半干旱地区，大部分地区海拔 1000 米以上。

Inner Mongolia Autonomous Region is an important ecological security barrier in northern China, with a total land area of 1.183 million square kilometers and a total population of 25.2 million. It is dominated by temperate continental monsoon climate. The precipitation is between 100 to 500 millimeters, concentrated in summer and autumn, and 85% of the area is in arid and semi-arid areas. Most areas are 1000 meters above sea level.

内蒙古是中国荒漠化土地最为集中、危害最为严重的省区之一，全区荒漠化土地面积 6000 万公顷，占自治区总土地面积的一半以上。境内分布有巴丹吉林、腾格里、乌兰布和、库布其四大沙漠和毛乌素、浑善达克、科尔沁、呼伦贝尔四大沙地。内蒙古自治区是中国荒漠化防治任务最艰巨的省份之一，承担了中国 40% 的荒漠化土地治理任务。

Inner Mongolia is one of the provinces seriously affected by desertification in China. The area of desertification land reaches 60 million hectares, accounting for more than half of the total land area of the autonomous region. There are four deserts i.e. BadainJaran Desert, Tengger Desert, Ulan Buh Desert and Kubuqi Desert and four sandy areas including MaowusuSandy Area, Hunshandake Sandy Land, KorqinSandy Land and Hulunbeier Sandy Land. Inner Mongolia Autonomous Region is one of provinces which have heavy task in combating desertification in China, which undertakes 40% of China's desertification land management tasks.

长期以来，内蒙古自治区历届政府按照《中华人民共和国防沙治沙法》的要求，组织发动全区人民，坚持不懈地开展荒漠化防治，不断探索治沙新模式，全区生态建设以每年超过 100 万公顷的速度向前推进，探索总结出了行政推动、政策促动、产业拉动、社会参与的荒漠化防治机制，走出了一条科学治理、综合治理、依法治理的路子。在总体思路上，始终坚持在保护的基础上治理，以自然修复为主、人工修复为辅，对国家重点生态工程项目区、自然保护区、封育区、严重沙化退化和生态脆弱区、农区严格实行禁牧，对草原牧区严格实行草畜平衡制度、全面推行禁牧休牧轮牧，对沙化特别严重暂时不宜采取人工治理的地区依法实施土地封禁保护，同时通过转变荒漠化地区人民的生产生活方式来减轻林草植被的压力，使荒漠生态系统得到有效保护和恢复。在建设内容上，坚持工程措施与生物措施相结合、人工造林治沙与飞播造林（种草）治沙及封沙育林（草）相结合，大力实施了京津风沙源治理、“三北”防护林体系建设、退耕还林、天然林资源保护、自然保护区及湿地保护建设、森林生态效益补偿、草原生态补奖等多项国家重点生态建设工程项目，实行因地制宜、综合治理。在治理的技术上，根据荒漠化防治的实际，以治沙、治水、治碱为重点，积极使用乡土植物种，科学配置防治模式；认真总结、筛选、组装配套适用的科技成果和先进技术，加大示范应用力度，不断提高覆盖面；根据立地条件、生态环境恶化程度的不同，在不同区域突出不同的治理模式，采取相应的治理技术。在实施传统生态工程防治荒漠化的同时，积极探索为荒漠化治理注入产业动力的途径，让荒漠化治理变得可持续，林沙草产业快速发展，逆向拉动荒漠化治理的能力不断提高，以林木种植、特色经济林培育、林下经济、沙生植物资源利用、野生动物繁育、生物质能源和森林沙漠旅游等为主的林业产业体系。

For a long time, the successive governments of the Inner Mongolia Autonomous Region have organized people from the whole region to work on the prevention and control of desertification in accordance with the requirements of the Law of the People's Republic of China on combating desertification, and constantly explored the new models of combating desertification. The ecological construction of the whole region is at the speed of more than 1 million annually. A desertification control mechanism including the administrative promotion, policy promotion, industry pulling and social participation was established, and a road of scientific governance,

comprehensive treatment and law-based management was built. In the overall thinking, we always adhere to the course with the protection-based governance, which mainly focused on natural restoration, supplemented by artificial restoration. For the national key ecological project areas, nature reserves, enclosure areas, serious desertification and ecological fragile areas and farming area, the ban on grazing was strictly implemented; for the grassland pastoral areas, the grass-and-livestock balance system and the system of the prohibition of grazing, rest grazing and rotation grazing was strictly and fully implemented. For the areas with heavy desertification which should not be treated with artificial measures, the land banned protection measures are adopted according to the law. By changing the people's production and life style in desertification areas, we reduce the pressure of forest and grass vegetation, so that the desert ecosystem has been effectively protected and restored. In the construction specification, we combine engineering measures and biological measures, artificial afforestation and aerial seeding (grass), sand control and enclosure & forestation (grass). We vigorously implemented the Beijing and Tianjin Sandstorm Source Control Program, "Three North" Shelter Forest Program, Returning Farmland to Forest, Natural Forest Resource Protection, Protection and Construction of Nature Reserves and Wetland, Forest Ecological Efficiency Compensation, Grassland Ecological Protection Award and Subsidy Policies and many other national key ecological construction projects. We perform comprehensive treatment based on local conditions. In the treatment technology, according to the actual situation of desertification control, we put the sand control, water control and alkali control as the focus, and actively use the local plant species, scientific configuration control model; we conscientiously sum up, screen, assemble the application of scientific and technological achievements and advanced technology, strengthen the efforts in the demonstration application, and constantly improve the coverage; according to site conditions and the degree of deterioration of ecological environment in different regions, we introduce different governance models and appropriate treatment technology. We conduct the traditional ecological

engineering to combat desertification, in the meantime, we actively explore ways to invigorate desertification control work, so that the desertification control has become sustainable, forest-sand-grass industry enjoys a rapid development, and the reverse pull ability to promote desertification control work continues to improve. In addition, we have developed a forestry industry system focusing on tree planting, featured economic forest cultivation, under-forest economy, the use of psammophytes resources, wild animal breeding, biomass energy and forest desert tourism.

经过几代人几十年的艰苦努力，内蒙古荒漠化防治取得了举世瞩目的成绩。全区人工造林保存面积达到 648.8 万公顷；荒漠化土地面积连续 15 年持续减少，年减少面积占全中国的三分之一；境内四大沙漠扩展趋势得到遏制，沙漠面积相对稳定；四大沙地林草盖度有了较大提高，沙化程度明显减轻；全区实现了由“沙进人退”到“人进沙退”的重大历史转变，为世界荒漠化防治和中国政府履行《联合国防治荒漠化公约》做出了巨大贡献。

After decades of several generations' hard work, the desertification control work in Inner Mongolia has made remarkable achievements. The area of preserving artificial afforestation in the whole area reaches 6.488 million hectares; the area of desertification land continues to decrease for 15 consecutive years, with the annual reduction area accounting for one third of China; the expansion trend in the four deserts in Inner Mongolia were curbed, and the desert area was relatively stable; the forest-and-grass cover percentage in the four deserts has been greatly improved, the desertification degree was significantly reduced; we has achieved a major historical change from "As the sand advances, we retreat" to "As people advance, the sand retreats," and we has made a significant contribution to the world's desertification control and Chinese government's implementation of the *United Nations Convention to Combat Desertification*.

鄂尔多斯市荒漠化防治概况

Overview of Desertification Combating in Ordos



鄂尔多斯市行政区规划图
Ordos' Administrative Division

鄂尔多斯意为“众多的宫殿”，土地总面积 8.7 万平方公里，总人口 205 万。800 多年前，成吉思汗途经鄂尔多斯，被这里水草丰美的景色所吸引，便将此地作为长眠之地。十五世纪中叶，蒙古族鄂尔多斯部驻牧河套，守护成吉思汗陵，始称鄂尔多斯。

Ordos, which means "numerous palaces" in Mongolian, covers an area of 87,000 square kilometers and has a population of 2.05 million. When traveling across this place 800 years ago, Genghis Khan was so impressed by the clear water and lush grass here that he decided to be buried here after his death. This place was named Ordos in the middle of the 15th century when Mongolia's Ordos tribe settled down in the Hetao area to guard the mausoleum of Genghis Khan.

鄂尔多斯三面被黄河环绕，孕育了萨拉乌苏文化、青铜文化，是著名的“河套人”发源地，是蒙古族传统文化、风俗和礼仪保存最为完整的地区之一。鄂尔多斯煤炭、天然气资源储量丰富，中心城区夏季平均气温 21℃，是中国北方理想的避暑休闲度假城市。

Ordos, surrounded by the Yellow River at three sides, was the birthplace of the Salawusu culture, the bronze culture and the famous Hetao people as well as one of the places with the best preserved traditional Mongolian culture, customs and rites. Boasting a rich reserve of coal and natural gas and an average temperature of 21 °C in the city center in summer, it is an ideal summer resort for leisure and holidays in northern China.

鄂尔多斯市地处干旱半干旱地区，年降水量在 400 毫米以下，境内分布有库布其沙漠和毛乌素沙地。荒漠化土地面积占全市国土总面积 91%，沙化土地总面积占国土总面积的 62.1%。上世纪 50 年代以来，鄂尔多斯市历届政府一手抓生态环境保护，一手抓生态建设，通过制定扶持、激励政策、科学治沙造林和发展沙产业等多种措施，开展大规模沙区治理，探索了草灌乔结合、以灌木为主的综合治理措施，有效推动了地区荒漠化和沙化土地治理进程。目前，全市森林覆盖率达到 26.7%。据荒漠化监测数据显示，近 10 年间，全市荒漠化土地面积减少 37 万公顷，流动沙面积减少 46 万公顷。黄河年输沙量比 1940—1978 年期间快速减少约 80%，世界高浑浊度的黄河正在向清水化方向转变。目前，全市森林面积达到了 232 万公顷，毛乌素沙地和库布其沙漠治理率分别达到 70% 和 25%，沙漠扩展趋势得到有效控制，毛乌素沙地沙害基本消失，珍稀及濒危动植物得到有效的保护，生态状况实现了从严重恶化到整体遏制走向全面逆转的重大历史性转变。2014 年巴黎气候大会上，鄂尔多斯库布其沙漠治理模式被联合国授予“生态治沙”的典范。

The annual precipitation of Ordos is less than 400mm as it is located in the arid and semi-arid region. With the Kubuqi desert and the Maowusu sandy area situated in this city, 91% of its territory is desert while 62.1% is sandy area. Since the 1950s, with equal emphasis on environmental protection and ecological construction, the Ordos government has taken various measures including formulating support and incentive polices, controlling desertification and planting forests in scientific ways and development the sand

industry to control the sandy area in a large scale and examined such comprehensive control measures as planting grass, bushes and trees together with bushes taking the majority, which has effectively advanced the process of controlling desertification and the sandy areas in the region. At present, the ratio of forest coverage in the city amounts to 26.7%. The monitoring statistics of desertification indicates that the area of desert and that of flowing sand in this city have 370,000 hectares and 460,000 hectares in recent decade. The annual sediment load of the Yellow River declined rapidly by about 80% from 1940 to 1978. As a result, this highly muddy river in the world is getting cleaner and cleaner. Meanwhile, the area of forests in this city represents 2.32 million hectares while 70% of the Maowusu sandy area and 25% of the Kubuqi desert have been under control, which has effectively restricted the expansion of desert, basically removed the negative impact of the Maowusu sandy area and effectively protected the endangered animals and plants. All these efforts have brought a historic transition to the once seriously deteriorated ecology in this city and made sure that it is now under a comprehensive control. At the 2014 Climate Change Conference in Paris, Ordos' control model of the Kubuqi desert was awarded the title of "the Model of Ecological Desertification Control" by the United Nations.

长期以来，在深入推进荒漠化治理的同时，积极探索“生态建设产业化、产业发展生态化”的特色发展之路。立足于灌木资源丰富的优势和平茬复壮的特性，大力发展林沙产业，建成了沙柳、柠条、杨柴、沙棘等林沙产业原料林基地，培育发展了沙柳人造板、重组木、颗粒饲料、沙棘山杏饮食品、保健品等产业，逆向拉动了生态建设，使生态、经济和社会效益实现了多元共赢。

For a long time, while deeply advancing the desertification prevention and control efforts, Ordos has also actively explored a unique path of development by integrating the ecological construction with the industrial development. Taking advantage of its rich bush resources and strong stubble, Ordos has made great efforts to develop its forest and sand industry, built *salix*, *caraganamicrophylla*, *hedysarummongolicum* and sea-buckthorn forest bases for providing raw materials to the forest and sand industry and cultivated such industries as salix manmade boards, scrimbers and granulated feed as well as sea-buckthorn and *Prunusansu* beverage, food and health products, which in turn has stimulated the ecological construction and boosted ecological, economic and social development at the same time.

治沙造林主要树种简介

Introduction to Major Varieties of Trees for Desertification Combating and Afforestation

北沙柳 (*Salix psammophila* C.Wang et Ch. Y. Yang), 别名沙柳、西北沙柳, 杨柳科、柳属, 灌木, 高 2-4 米。老枝浅灰色、黄褐色或紫褐色, 幼枝黄色, 叶线形或线状披针形。生于流动、半流动沙丘及沙丘间低地。枝条丛生不怕沙压, 根系发达, 萌芽力强, 是优良固沙树种, 也是极少数可以生长在盐碱地的植物。嫩枝可供饲用, 枝条可供编筐、篮等用。分布内蒙古、陕西、宁夏等地。

Salix psammophila C.Wang et Ch. Y. Yang, growing up to 2 to 4 meters, is a kind of bushes of flowering plant in the willow family known by the common names salix and northwest salix. The old branches are in light grey, tawny or puce colors while the new branches are yellow with linear leaves or lineari-lanceolatus leaves. It usually grows in flowing and semi-flowing dunes and the lowland between dunes. Its branches are so thick and resilient that they will not be easily broken by sand. With strong roots, it also has a great geminating vitality, which makes it a good variety of tree to fix sand and one of the few plants that is able to survive in saline-alkali soil. Its twigs can be used as feed and its withes can be used to make baskets. It usually grows in such places as Inner Mongolia, Shaanxi and Ningxia.

柠条锦鸡儿 (*Caragana korshinskii* Kom.), 别名柠条、白柠条、毛条, 豆科、锦鸡儿属, 灌木, 高 1-3 米。树皮金黄色, 有光泽。小叶 12-16, 羽状排列, 倒披针形或矩圆状倒披针形。生于流动沙丘及半固定沙地, 根系发达, 耐旱、耐寒、耐高温, 是干旱草原、荒漠草原地带的旱生灌丛。柠条锦鸡儿是中国西北、华北、东北西部水土保持和固沙造林的重要树种之一, 是良好的饲用植物。

Caragana korshinskii Kom., growing up to 1 to 3 meters is a kind of bushes of Leguminosae of the caragana family known by the common names caraganamicrophylla and white caraganamicrophylla. The bark is golden and lustrous. The leaves are small with 12 to 16 pieces lining up like features and are oblanceolate or rectangular-circle oblanceolate. It grows in flowing dunes or semi-fixed sandy areas. It is one of the xerophytic shrubs in arid grassland and desert grassland with strong roots and is resistant to drought, cold and high temperature. It is one of the major varieties of trees for water and soil conservation and afforestation for fixing sand in the northwest, north and the west part of the northeast in China and a good plant for making feed.

山杏 (*Prunus ansu* Kom.), 别名野杏, 蔷薇科、李属, 小乔木, 高 1.5–5 米。树皮暗灰色, 纵裂。小枝暗紫红色, 单叶互生, 宽卵形至近圆形。果近球形, 稍扁, 直径约 2cm, 顶端尖, 果肉薄。多生于向阳石质山坡, 是黄河流域重要乡土树种之一, 是荒山绿化、水土保持的重要树种。杏仁可入药, 经加工提炼后可制作饮料, 是化妆品及优质香皂的重要原料。

Prunus ansu Kom., growing up to 1.5 to 5 meters, is a kind of small arbor of the rose family of Prunus known by its common name wild apricot. The bark is dark grey with slits. The sprigs are dark purplish red, alternate and broadly ovate to suborbicular. The fruits are like spheres but more flat with a diameter of about 2cm, a point top and thin pulp. Growing in the south side of rocky mountain, it is one of the major local varieties of trees in the Yellow River basin and an important variety of tree for water and soil conservation. The almonds, if processed, are important raw materials for medicine, beverage, cosmetics and high quality soap.

樟子松 (*Pinus sylvestris* Linn. var. *mongolica* Litv.), 别名海拉尔松, 松科、松属, 常绿乔木, 高达 30 米, 树干下部树皮黑褐色或灰褐色, 上枝树皮及树枝黄色至褐黄色, 内侧金黄色裂成薄片脱落, 针叶 2 针一束, 幼树树冠尖塔形, 老则成圆顶或平顶, 树干挺直。雌雄同株, 雄球花卵圆形, 黄色, 聚生在当年生枝的下部; 雌球花淡紫褐色。球果长卵形。种子长卵圆形或倒卵圆形, 微扁, 黑褐色。生于山地的山脊、山顶和阳坡以及较干旱的沙地及石砾砂土地区。耐旱性抗旱性强, 适应性广, 是中国北方干旱地区重要的造林树种之一。

Pinus sylvestris Linn. var. *mongolica* Litv., growing up to 30 meters, is a species of aphyllium of the pine family of Pinus also known as Mongolian scotch pine. The bark on the lower part of the trunk is black brown or taupe. The branches are yellow to sallow. The inner side of the branch is golden and falls down as cracked flakes. The leaves are like needles with two pieces in a bundle. The crown of its sapling is like a steeple and turns flat when it grows old. The trunk is very straight. This is a monoecious species. The male cone is oval and yellow, clustering under the newly germinated branches while the female cone is light puce. The fruits are oblong. The seeds are oblong or obovate, a bit flat and dark brown. It grows in ridges, mountaintops and the south side of mountain as well as dry sandy areas and sand gravel areas. Resistant to drought and adaptive to all kinds of conditions, it is one of the important varieties of trees for afforestation in the dry areas in northern China.

塔落岩黄芪 (*Hedysarum laeve* Maxim.), 别名杨柴, 豆科、黄芪属, 半灌木, 高 1-2 米。茎直立, 多分枝, 树皮灰黄色或灰褐色, 常呈纤维状剥落。小枝黄绿色或灰绿色, 疏被平伏的短柔毛。单数羽状复叶, 总状花序腋生, 花紫红色, 荚果常具 1-2 个荚夹。花期 6-9 月, 果期 9-10 月。沙生中旱生植物。生于半固定、流动沙丘或黄土丘陵覆沙区, 是流动沙地的固沙先锋物种。

Hedysarum laeve Maxim., growing up to 1 to 2 meters, is a species of subshrub of the bean family of Astragalus L. also known as hedysarummogolicum. It has a straight spine, many branches and grayish yellow or taupe barks that usually fall down as fibers. The twigs are yellow green or grey green covered by short and soft hair. The leaves are odd, pinnate and compound. The flowers are axillary, burgandy and in racemes. The fruits have 1 to 2 pods. The flowers blossom from June to September and fruits grow from September to October. It is a kind of mesoxerophytes that grow in semi-fixed or flowing dunes or the sandy areas in loess hills and a major variety of tree for fixing sand in flowing sand.

中国沙棘 (*Hippophae rhamnoides* Linn.subsp.chinesis Rousi), 别名醋柳、酸刺, 胡颓子科、沙棘属, 落叶灌木或小乔木, 高 1-5 米, 具粗壮棘刺, 幼枝密被褐锈色或银白色而带褐色的鳞片, 老枝灰黑色。单叶近对生, 条形或条状披针形。花单性。果为坚果, 多为橘黄色。花期 5-6 月, 果期 9-10 月。旱中生植物, 耐干旱、耐贫瘠及盐碱土壤, 被广泛用于水土保持。沙棘为药食同源植物。沙棘的根、茎、叶、花、果, 特别是沙棘果实含有丰富的营养物质和生物活性物质, 可以广泛应用于食品、医药、轻工、航天等领域。沙棘果实入药具有止咳化痰、健胃消食、活血散瘀之功效。

Hippophae rhamnoides Linn.subsp.chinesis Rousi, growing up to 1 to 5 meters is a kind of deciduous shrubs of Elaeagnaceae of Hippophae also known as Hippohaerhamnoides and Elaeagnaceae branch. It has sturdy thorns. The new branches are covered by thick multi rustic or silvery white and brown scales. The old branches are dark grey. The leaves are odd, opposite and lanceolate like strips. The flowers are unisexual. The fruits are nuts, most of which are orange. The flowers blossom from May to June while the fruits grow from September to October. It is a kind of intermediate mesophytes that are resistant to drought and arid and saline soil, so it is applied for water and solid conservation. It can be used to make medicine and food. Its roots, spines, leaves, flowers and fruits in particular are nutritious and rich in bio-activators, so they are applied widely in many fields like food, pharmacy, light industry and aerospace. The medicine made from its fruits can relieve cough, reduce sputum, increase appetite, invigorate the circulation of blood and dissipate blood stasis.