

## VEGETATION SURVEY OF ORASSO DONGOR IRON ORE MINES (GOA)

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### ABSTRACT

The present study reports the vegetation survey of abandoned iron ore mine reject dumps at Orasso Dongor mines situated in Advelpal village, Assonora, North of Goa State.

The list of species surveyed (both cultivated and naturally occurring plants) includes herbs (including grasses and legumes), climbers, shrubs and trees. In all, a total of 164 species belonging to 139 genera, distributed among 55 families have been recorded.

### INTRODUCTION

The Orasso Dongor mine owned by Sesa Goa Limited, is situated in Advelpal village, Assonora, North Goa and is spread over an area of 100 hectares. This presently abandoned mine, was once extensively mined for iron ore in the sixties.

The present study gives the details of vegetation survey carried out on this mine. The main objective of this work was to identify plant species that can tolerate the inhospitable conditions of the mine sites and can grow without any artificial aid, such as fertilizers and irrigation. This will help to identify the potential plant species which can be used for revegetation

programmes of iron ore mine wastelands in the state.

The list of species surveyed (both cultivated and naturally occurring plants) includes herbs (including grasses and legumes), climbers, shrubs and trees. In all, a total of 164 species, belonging to 139 genera, distributed among 55 families have been recorded. Circumscription of families have been restricted to the light recent revisions. Bentham and Hooker's system (1862-1883) of classification which is followed in all Indian Herbaria and Floras has been adopted here.

## Vegetation at Orasso Dongor—At a Glance

	Angiosperms		Pteridophytes	Total
	Dicotyledons	Monocotyledons		
1. Number of Families	42	9	4	55
2. Number of Genera	108	25	6	139
3. Number of Species	130	28	6	164
a. Naturally occurring	119	28	6	151
b. Cultivated	13	—	—	13

## ENUMERATION

	Habit	Occurrence	Abundance	Fl. & Fr.
1	2	3	4	5
<b>PTERIDOPHYTES</b>				
SCHIZAEACEAE				
<i>Lygodium flexuosum</i> (L.) Swartz	Herb	N.O.	+	Sept.-Nov.
PTERIDACEAE				
<i>Adiantum philippense</i> L.	Herb	N.O.	++	Sept.-Nov.
<i>Cheilanthes tenuifolia</i> (Burm.) Swartz	Herb	N.O.	++	Aug.
<i>Pteris pellucida</i> Presl	Herb	N.O.	+	Nov.
BLECHNACEAE				
<i>Blechnum orientale</i> L.	Herb	N.O.	+	Sept.-Nov.
SELAGINELLACEAE				
<i>Selaginella tenera</i> (Hook. & Grev.) Spring.	Herb	N.O.	++	Nov.
<b>ANGIOSPERMS</b>				
<b>DICOTYLEDONAE</b>				
MENISPERMACEAE				
<i>Cyclea peltata</i> (Lam.) Hook.	Shrub	N.O.	+	Jan.-May
<i>Tinospora sinensis</i> (Lour.) Merr.	Shrub	N.O.	+	Dec.-Feb.
FLACOURTIACEAE				
<i>Flacourtia montana</i> Grah.	Tree	N.O.	+	Nov.-Apr.
POLYGALACEAE				
<i>Polygala elongata</i> Klein. ex Willd.	Herb	N.O.	++	Aug.-Nov.
MALVACEAE				
<i>Hibiscus vitifolius</i> L.	Shrub	N.O.	+	Sept.-Feb.
<i>Sida acuta</i> Burm.f.	Herb	N.O.	++	Sept.-Dec.

NO = Naturally occurring species. C = Cultivated species  
 + = Rare, ++ = Common +++ = Abundant

1	2	3	4	5
<i>Sida rhombifolia</i> L.	Herb	N.O.	++	Oct.-Dec.
<i>Urena lobata</i> L.	Shrub	N.O.	+	Oct.-Dec.
BOMBACACEAE				
<i>Bombax ceiba</i> L.	Tree	C	+	Feb.-May
STERCULIACEAE				
<i>Melochia corchorifolia</i> L.	Herb	N.O.	++	Apr.-Nov.
<i>Sterculia urens</i> Roxb.	Tree	N.O.	+	Oct.-May
<i>Waltheria indica</i> L.	Shrub	N.O.	+	Nov.-Jan
TILIACEAE				
<i>Corchorus tridens</i> L.	Herb	N.O.	++	Aug.-Oct.
<i>Growia microcos</i> L.	Shrub	N.O.	++	May-Oct.
BALSAMINACEAE				
<i>Impatiens kleinii</i> W. & H.	Herb	N.O.	++	Aug.-Nov.
RUTACEAE				
<i>Zanthoxylum rhetsa</i> (Roxb.) DC.	Tree	N.O.	+	Jul.-Dec.
OCHNACEAE				
<i>Ochna obtusata</i> DC.	Shrub	N.O.	+	Feb.-Jun.
MELIACEAE				
<i>Naregamia alata</i> W. & H.	Herb	N.O.	+	Aug.-Dec.
RHAMNACEAE				
<i>Ziziphus glabrata</i> Heyne ex Roth	Tree	N.O.	+	Nov.-Mar.
<i>Ziziphus mauritiana</i> Lam.	Tree	N.O.	+	Sept.-Jan.
<i>Ziziphus oenoplia</i> (L.) Miller	Shrub	N.O.	+	Aug.-Nov.
<i>Ziziphus rugosa</i> Lam.	Shrub	N.O.	+	Dec.-May
LEEACEAE				
<i>Leea indica</i> (Burm. f.) Merr.	Shrub	N.O.	+	Jul.-Dec.
ANACARDIACEAE				
<i>Anacardium occidentale</i> L.	Tree	C	++	Jan.-Mar.
<i>Holigarna arnottiana</i> Hook. f.	Tree	N.O.	+	Jan.-Jun.
<i>Mangifera indica</i> L.	Tree	C	++	Jan.-Jun.
<i>Lannea coromandelica</i> (Houtt.) Merr.	Tree	N.O.	++	Feb.-May

1	2	3	4	5
FABACEAE				
<i>Alysicarpus bupleurifolius</i> (L.) DC.	Herb	N.O.	++	Oct.-Dec.
<i>Alysicarpus vaginalis</i> (L.) DC.	Herb	N.O.	++	Oct.-Feb.
<i>Atylosia scarabaeoides</i> Benth.	Herb	N.O.	++	Jun.-Oct.
<i>Crotalaria filipes</i> Benth.	Herb	N.O.	++	Oct.-Dec.
<i>Dalbergia sympathetica</i> Nimmo ex Grah.	Tree	N.O.	+	Nov.-Aug.
<i>Derris scandens</i> (Roxb.) Benth.	Shrub	N.O.	+	Jun.-Nov.
<i>Desmodium triflorum</i> (L.) DC.	Herb	N.O.	+++	Oct.-Jan.
<i>Desmodium heterocarpon</i> (L.) DC.	Shrub	N.O.	++	Aug.-Nov.
<i>Erythrina variegata</i> L.	Tree	N.O.	+	Apr.-Jun.
<i>Geissaspis cristata</i> W. & A.	Herb	N.O.	++	Sept.-Nov.
<i>Geissaspis tenella</i> Benth.	Herb	N.O.	++	Sept.-Nov.
<i>Indigofera prostrata</i> Willd.	Herb	N.O.	++	Nov.-Jan.
<i>Phaseolus sublobatus</i> Roxb.	Herb	N.O.	+	Aug.-Oct.
<i>Smithia conferta</i> Sm.	Herb	N.O.	+	Aug.-Nov.
<i>Smithia salsuginea</i> Hance	Herb	N.O.	+	Sept.-Nov.
<i>Tephrosia coccinea</i> Wall.	Herb	N.O.	+	Oct.-Dec.
<i>Tephrosia purpurea</i> (L.) Pers.	Shrub	N.O.	+	Aug.-Dec.
<i>Zornia gibbosa</i> Spanoghe	Herb	N.O.	++	Aug.-Sept
CAESALPINIACEAE				
<i>Cassia absus</i> L.	Herb	N.O.	+	Aug.-Nov.
<i>Cassia mimosoides</i> L.	Herb	N.O.	++	Aug.-Dec.
<i>Cassia tora</i> L.	Herb	N.O.	+	Aug.-Dec.
MIMOSACEAE				
<i>Acacia auriculiformis</i> A. Cunn. ex Benth.	Tree	C	+++	Dec.-Apr.
<i>Acacia mangium</i> Willd.	Tree	C	++	Dec.-Apr.
<i>Acacia pennata</i> (L.) Willd.	Shrub	C	++	Jun.-Nov.
<i>Acacia torta</i> (Roxb.) Craib	Shrub	C	+	Apr.-Jun.
<i>Mimosa pudica</i> L.	Herb	N.O.	++	Jul.-Dec.
<i>Wagatea spicata</i> Dalz.	Shrub	N.O.	+	Jan.-May
COMBRETACEAE				
<i>Calycopteris floribunda</i> (Roxb.) Roxb	Shrub	N.O.	++	Mar.-May
<i>Terminalia bellirica</i> (Gaertner) Roxb.	Tree	C	+	Mar.-Nov.

1	2	3	4	5
MYRTACEAE				
<i>Eugenia corymbosa</i> Lam.	Shrub	N.O.	+	Mar.-May
<i>Psidium guajava</i> L.	Tree	C	+	Jun.-Sept.
<i>Syzygium cumini</i> (L.) Skeels	Tree	C	+	Mar.-May
LECYTHIDACEAE				
<i>Careya arborea</i> Roxb.	Tree	N.O.	+	Mar.-May
MELASTOMACEAE				
<i>Melastoma malabathricum</i> L.	Shrub	N.O.	+	Mar.-Nov.
<i>Memecylon umbellatum</i> Burm. f.	Shrub	N.O.	++	Jan.-Mar.
<i>Osbeckia truncata</i> Don ex Wt. & Arn.	Herb	N.O.	++	Oct.-Dec.
LYTHRACEAE				
<i>Woodfordia tomentosa</i> Bedd.	Shrub	N.O.	+	Dec.-May
ONAGRACEAE				
<i>Ludwigia perennis</i> L.	Herb	N.O.	++	May-Dec.
CUCURBITACEAE				
<i>Solena amplexicaulis</i> (Lam.) Gandhi	Climber	N.O.	+	Jun.-Oct.
<i>Mukia maderaspatana</i> (L.) M. Roemer	Climber	N.O.	+	Jul.-Nov.
RUBIACEAE				
<i>Neanotis foetida</i> (Hook. f.) W.H. Lewis	Herb	N.O.	+++	Jul.-Sept.
<i>Ixora coccinea</i> L.	Shrub	N.O.	+	Jan.-Dec.
<i>Mussaenda laxa</i> Hutchin.	Shrub	N.O.	+	Jul.-Nov.
<i>Randia uliginosa</i> DC.	Tree	N.O.	+	May-Jun.
<i>Spermacoce hispida</i> L.	Herb	N.O.	++	Aug.-Nov.
<i>Borreria ocimoides</i> (Burm. f.) DC.	Herb	N.O.	++	Aug.-Nov.
<i>Spermacoce pusilla</i> Wallich	Herb	N.O.	++	Aug.-Nov.
<i>Wendlandia thyrsoides</i> (Romer & Schultes) Steudel	Tree	N.O.	+	Mar.-May.
ASTERACEAE				
<i>Ageratum conyzoides</i> L.	Herb	N.O.	++	Nov.-May.
<i>Blumea mollis</i> (D. Don) Merr.	Herb	N.O.	++	Jan.-Apr.
<i>Emilia sonchifolia</i> (L.) DC.	Herb	N.O.	++	Sept.-Apr.
<i>Eupatorium odoratum</i> L.	Herb	N.O.	++	Mar.-May

1	2	3	4	5
<i>Senecio grahami</i> Hook. f.	Herb	N.O.	++	Aug.-Dec.
<i>Tricholepis glaberrima</i> DC.	Herb	N.O.	++	Oct.-Dec.
MYRSINACEAE				
<i>Maesa indica</i> (Roxb.) A. DC.	Shrub	N.O.	+	Nov.-Jan.
APOCYNACEAE				
<i>Alstonia scholaris</i> (L.) R. Br.	Tree	N.O.	+	Jun.-Apr.
<i>Holarrhena pubescens</i> (Buch.-Ham.) Wallich ex Don.	Shrub	N.O.	+	Apr.-Nov.
<i>Ichnocarpus frutescens</i> (L.) R. Br.	Shrub	N.O.	++	Nov.-Jan.
ASCLEPIADACEAE				
<i>Calotropis gigantea</i> (L.) R. Br.	Shrub	N.O.	+	Dec.-May
<i>Ceropegia attenuata</i> Hook.	Herb	N.O.	+	Jul.-Oct.
<i>Cosmostigma racemosum</i> (Roxb.) Wight	Shrub	N.O.	+	Jun.-Aug.
<i>Cryptolepis buchnani</i> Roemer & Schultes	Shrub	N.O.	+	Mar.-Dec.
<i>Daemia extensa</i> R. Br.	Herb	N.O.	+	Aug.-Jan.
<i>Hemidesmus indicus</i> (L.) R. Br.	Twiner	N.O.	++	Nov.-Feb.
<i>Holostemma annulare</i> (Roxb.) K. Schum.	Twiner	N.O.	+	Jul.-Aug.
<i>Marsdenia volubilis</i> Cooke	Twiner	N.O.	+	Apr.-May
GENTIANACEAE				
<i>Canscora diffusa</i> (Vahl) R. Br.	Herb	N.O.	++	Mar.-Nov.
<i>Exacum bicolor</i> Roxb.	Herb	N.O.	+	Sept.-Nov.
<i>Exacum lawii</i> C.B. Clarke	Herb	N.O.	++	Oct.-Nov.
CONVOLVULACEAE				
<i>Argyreia involucreta</i> C.B. Clarke	Twiner	N.O.	+	Oct.-Nov.
<i>Evolvulus alsinoides</i> (L.) L.	Herb	N.O.	++	Jul.-Nov.
<i>Ipomoea obscura</i> (L.) Ker Gawler	Twiner	N.O.	++	Aug.-Oct.
<i>Merremia tridentata</i> (L.) Hallier f.	Twiner	N.O.	++	Aug.-Oct.
SOLANACEAE				
<i>Solanum anguivi</i> Lam.	Shrub	N.O.	+	Aug.-Nov.
SCROPHULARIACEAE				
<i>Centranthera hispida</i> R. Br.	Herb	N.O.	++	Aug.-Oct.
<i>Lindernia crustacea</i> (L.) F. Muell.	Herb	N.O.	+++	Aug.-Jan.

1	2	3	4	5
<i>Ramphicarpa longiflora</i> Benth.	Herb	N.O.	++	Ang.-Sept.
<i>Sopubia delphinifolia</i> (L.) Don	Herb	N.O.	++	Aug.-Nov.
<i>Striga asiatica</i> (L.) O. Kuntze	Herb	N.O.	++	Aug.-Nov.
ACANTHACEAE				
<i>Justicia procumbens</i> L.	Herb	N.O.	++	Oct.-Mar.
<i>Rungia linifolia</i> Nees	Herb	N.O.	++	Nov.-Feb.
VERBENACEAE				
<i>Callicarpa tomentosa</i> (L.) Murray	Shrub	N.O.	+	Nov.-May
<i>Clerodendrum viscosum</i> Vent.	Shrub	N.O.	+	Oct.-Jan.
<i>Lantana camara</i> L.	Shrub	N.O.	+	Jan.-Dec.
LAMIACEAE				
<i>Hyptis suaveolens</i> (L.) Poit.	Herb	N.O.	++	Aug.-Dec.
<i>Ocimum tenuiflorum</i> L.	Herb	N.O.	++	Apr.-May
AMARANTHACEAE				
<i>Celosia argentea</i> L.	Herb	N.O.	++	Aug.-Dec.
PIPERACEAE				
<i>Peperomia pellucida</i> (L.) H. B.&K.	Herb	N.O.	++	Aug.-Nov.
EUPHORBIACEAE				
<i>Bridelia retusa</i> Spreng.	Tree	N.O.	+	Apr.-Oct.
<i>Bridelia scandens</i> (Roxb.) Willd.	Shrub	N.O.	++	Oct.-Dec.
<i>Euphorbia hirta</i> L.	Herb	N.O.	++	Jan.-Dec.
<i>Euphorbia notoptera</i> Boiss.	Herb	N.O.	++	Aug.-Dec.
<i>Macaranga peltata</i> (Roxb.) Muell.-Arg.	Tree	N.O.	++	Jan.-May
<i>Phyllanthus maderaspatensis</i> L.	Herb	N.O.	++	Jan.-May
<i>Phyllanthus amarus</i> Schum. & Thonn.	Herb	N.O.	+	Jul.-Sept.
<i>Sapium insigne</i> (Royle) Trimen	Tree	C	+	Jan.-Apr.
<i>Tragia muelleriana</i> (Muell.-Arg.) Pax & Hoffm.	Herb	N.O.	+	Aug.-Dec.
ULMACEAE				
<i>Trema orientalis</i> (L.) Blume.	Tree	N.O.	+	Jan.-Dec.
MORACEAE				
<i>Artocarpus heterophyllus</i> Lam.	Tree	C	+	Jan.-Sept.

1	2	3	4	5
<i>Ficus benghalensis</i> L.	Tree	N.O.	+	Jan.-Apr.
<i>Ficus heterophyllus</i> L. f.	Tree	N.O.	+	Apr.-Jun.
<i>Ficus bispida</i> L.f.	Tree	N.O.	+	Apr.-Jul.
CASUARINACEAE				
<i>Casuarina equisetifolia</i> Forster & Forster f.	Tree	C	++	Sept.-Jun.
MONOCOTYLEDONAE				
ORCHIDACEAE				
<i>Liparis nervosa</i> Linn.	Herb	N.O.	+	Jul.-Sept.
<i>Habenaria marginata</i> Coleb.	Herb	N.O.	+	Sept.-Oct.
DIOSCOREACEAE				
<i>Dioscorea bulbifera</i> L.	Twiner	N.O.	+	Aug.-Nov.
<i>Dioscorea pentaphylla</i> L.	Twiner	N.O.	+	Sept.-Nov.
LILIACEAE				
<i>Asparagus racemosus</i> Willd.	Herb	N.O.	+	Jun.-Nov.
<i>Gloriosa superba</i> L.	Climber	N.O.	+	Aug.-Oct.
<i>Smilax zeylanica</i> L.	Climber	N.O.	+	Jun.-Nov.
COMMELINACEAE				
<i>Murdannia semiteres</i> (Dalz.) Santapau	Herb	N.O.	++	Aug.-Sept.
ARECACEAE				
<i>Caryota urens</i> L.	Tree	N.O.	+	Jan.-Dec.
ERIOCAULACEAE				
<i>Eriocaulon cinereum</i> R. Br.	Herb	N.O.	++	Sept.-Nov.
<i>Eriocaulon xeranthemum</i> Mart.	Herb	N.O.	++	Aug.-Sept.
ARACEAE				
<i>Amorphophallus commutatus</i> Engler	Herb	N.O.	+	May-Jun.
<i>Colocasia esculenta</i> (L.) Schott	Herb	N.O.	+	Jun.-Aug.
CYPERACEAE				
<i>Cyperus compressus</i> L.	Herb	N.O.	++	Aug.-Nov.
<i>Cyperus iria</i> L.	Herb	N.O.	++	Aug.-Dec.
<i>Fimbristyllis ferruginea</i> (L.) Vahl	Herb	N.O.	++	Sept.-Nov.



1	2	3	4	5
<b>Fimbristylis polytrichoides</b> (Retz.) R. Br.	Herb	N.O.	+	Sept.-Nov.
<b>Rhynchospora wightiana</b> Steud.	Herb	N.O.	++	Aug.-Nov.
POACEAE				
<b>Aristida hystrix</b> L. f.	Herb	N.O.	+	Oct.-Nov.
<b>Dactyloctenium aegyptium</b> (L.) P. Beauv.	Herb	N.O.	+	Sept.-Oct.
<b>Digitaria ciliaris</b> (Retz.) Koeler	Herb	N.O.	++	Aug.-Nov.
<b>Dimeria woodrowii</b> Stapf	Herb	N.O.	+	Oct.-Nov.
<b>Eragrostis nnioloides</b> (Retz.) Nees ex Steud.	Herb	N.O.	++	Sept.-Nov.
<b>Heteropogon contortus</b> (L.) P. Beauv. ex Roemer & Schultes	Herb	N.O.	++	Sept.-Nov.
<b>Isachne elegans</b> Dalz. ex Hook. f.	Herb	N.O.	+	Sept.-Nov.
<b>Oplismenus burmannii</b> (Retz.) P. Beauv.	Herb	N.O.	+	Sept.-Nov.
<b>Panicum notatum</b> Retz.	Herb	N.O.	++	Sept.-Nov.
<b>Setaria pallidifusca</b> (Schumach.) Stapf	Herb	N.O.	++	Aug.-Nov.

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