**Collection and Field Note Book**  
*No. 80*  
*(Aug. 8, 1966 – Dec. 21, 1966)*  
*(48014–48232)*

### JOHNSTON ISLAND - MARSHALL ISLANDS, Kwajalein

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**END**
Masashi Kawanuki
8914 Yamashigashi
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All labels typed

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Smithsonian Institution,
Washington, D.C., U.S.A.

$5.00 Reward
Aug. 8 - Left Washington 5:30 a.m.
via Chicago 12 1/2 hours stop,
talking to Mrs. Katherine Chapman
on hypothetical island invented
for use in elementary economic
text), arrived 8:47 10:20 p.m.
Aug. 9 - Hayward, Calif.
Aug. 10 - Left 4:47 a.m. am.
Portland 5:20, left 10:15
am, Honolulu 1:30.
Talked to Samouen, yes,
Church, etc.
Aug. 11 - Left Hickam 2:40
via MAC charter PC-6 (Kallewoth) 
7:15 a.m. Arr. Johnston.
10:30 a.m.
Some small weedy veg.
algae in shell;
feral small trees, 1-2 m.
tall. "Torresia tenuis" here and
there. Yucca var. repanda on
banks of sand. Cacanaria
12 m. tall. "Thysia populina.
Cordia arborescens
Ficus
Hanseavera
Barbados repens (white fdl).
Leaves very broad, green, rounded
at apex (weed in small garden)
Portulaca oleracea (weed in garden)
Arkelius oleracea (weed)
Costus armatus (cult.)
Crinum sp. (cult.) (small flowers)
Hypogrochilos littoralis (cult. 7/6)
Strunzophum cumulatum (weed)
The hills by terminal
are 3.4 m tall, fairly sturdy.
Small garden by terminal
seem to have some mixture
of dark soil.
Fairy tans see.

Left Johnston 11:45 a.m.
An Kwajalein 7:30 p.m.

Aug 12 - Kwajalein Islet
central area on seaward
side.
Lawns of Lands B & B
dominantly Euphorbia,s
Chrysanthemum, but with
Desmodium canum, Gentiana
others, Paspalum setaceum,
Euphorbia esula, Heliotropium
vegetation all prominent.
Phyllanthus amarus
Gentiana nodiflora,
Euphorbia canina, Cyperus
of Polydactylus, Celosia & Co.

Eucalyptus, eucalyptus all
present. Potabaica oleaceae 400.
Also Eleusine indica,
Cyperus tetetes
Euphorbia nitens
Paspalum setaceum
Cyperus nitens
Cyperus rotundus
Tridax plumosus
Paspalum setaceum

Interrupted strip
of beachrock, about 2
feet, the upper 3-4 dm
thick, irregularly
fitted and pot-holed
on upper surface, coarse
grained, many eroded
This is being undercut
and broken. The upper
half of the gently
sloping surface has
a good many shallow
pools, mostly with
somewhat overhanging
edges, rather chalky
looking inside usually
some fine sand in bottom.

Around other building
and in lawns along roads
in central area:
* Dactylorhiza, eugenia
  Cyperus l. compressus
  Digitaria of hensy
  Cerashus echinatus
  Vernonia cinerea
  Digitaria of tenuissime
  Chlorophagon acuminatus
Cultivated or sometimes planted
Cyperus circinalis
Hibiscus syriacus
Brassavola aristophyta
Pedilanthus tithymaloides
Plumeria rubra
Cocos nucifera
Vitex trifolia
Hymenocallis littoralis
Cunnum asiaticum

Colocasia esculenta
Casurina equisetifolia
Thympoglossus argenteus
Pandanus tectinus
Hymenaea
Lophira tormentosa

Wild native species seen
Triumphetta procumbens
Pisonia pes-caprae
Leptinurus repens
Fimbriostylis cynodes
Wedelia biflora

Thympoglossus has much more
than before, is also becoming
a plant, locally, also extremely common.

Hospital

Tom Booker - Formerly

Mr. Harry Lum
Major Hall
Mr. Garland
Mr. Ray
Col. J.G. Waterman
Col. Healy
Hospital

Mr. Broskey - Forward aide

Tom Butler -
Taxi 3411

Boat 2318
Cultivated or obviously planted:
- Caryota cinerea
- Hibiscus coccineus
- B. coccineus var. coccineus
- Brasenia hexandra
- Pedilanthus tithymaloides
- Plumeria rubra
- Corozo caesia
- Vitis triphila
- Hymenocardia littoralis
- Lumnis asiaticum

Cocos nucifera
- Carinera equisetifolia
- Trumexia argentea
- Pandanus tectorius
- Hymenocoea
- Leptocarpa tormentosa

Wild native species seen:
- Triumfetta procumbens
- Ipomoea pes-caprae
- Lepturus repens
- Timbriphytis cymosa
- Wedelia tilfordii

Euphobia thyrsiflora has become very much more abundant than before. Dentella has also become very abundant locally. Cephalotes is also extremely common, and Desmodium canum more abundant than ever.

People in Kwajalein:
- Mr. Robert Halsey
- Mr. Henry Leung
- Major Hall
- Mr. Garland
- M. Ray
- Mr. Kay
- Col. J.G. Waterman
- Col. Healy
Aug. 11 - Johnston, J.
Ficus
planted in pot

Aug. 13 - Kwajalein Atoll
Kwajalein Jetty

15' Eragrostis
rare along walks in edges of lawns

Aug. 13 - Kwajalein Jetty
in lawns around buildings

16' Eclipta
common locally

17' Dentella
very abundant locally

18' Hedyste corymbosa (L.)
very common along walls

19' Cyperus cf. polystachys
locally common

20' Hedyste corymbosa (L.)
locally common

21' Firmicystis cymosa
common

22' Heliotropium
locally common

23' Firmicystis cymosa R. Br.
uncommon (with #48021)

24' Euphorbia 'tumful'
locally very abundant

Shrub 1 m tall, fire turning reddish when wilt, sect.
orange-red.

depressed clump,
culms spreading to somewhat ascending.

heads white, plants depressed (possibly from
mowing)
forming a dense mat
on ground. flowers white,
culms, leaf toothed.
plant procumbent &
ascending, culms nearly white;
culms spreading to
ascending.
prostrate, flowers pink.

flowers white.
loosely caespitose, culms ascending,
prostrate, forming a yellowish
green mat.
1946 Marshall Is.

48075
Paspalum setaceum
common

22 26 Digitaria hensysi
small colony in lawn
near terminal

27 Digitaria tenuissima?
common locally near air
terminal (also seen in housing area)

Aug. 13 - Kwajalein Islet
planted in housing area

28........ in very sheltered place

29... Heliotropium x fragrans
2 trees

22 30 Tabebuia
2 trees seen

31 Kalanchoe?

32 Philodendron?

33 Cordia sebatica

34 Acalypha wilkesiana

Kwajalein Atoll

culms decumbent
from small tufts.

prostrate, forming this
mat, fruiting culms
ascending.

immature shrub 1.5 m tall,

casitiform: stalks.

small tree 3 m tall.

flower bright vermilion,

carolla sub-orang, with
10 lobes in 2 series, the inner
smaller; fruit immature
(mature one large, yellow).

small tree, 6-7 m tall.

flower pale pink,

very fleshy herb, leaves
gray somewhat in
one plane; stems
vines, climbing on houses,

leaves starting sagittate
on young plants, becoming
more divided as plant
get larger;

white, turning greenish.

shrub 2 m tall; carolla vermilion.

shrub 2 m tall; leaves
coffey, reddish, green; stems dull
red.
Cultivated plants - from Wham:
- Polypodium scolopendria
- Pongra oleifera
- Ficus benjamin
- Alpinia purpurata
- Baussa nigrophylla
- Philodendron × guaritadum
- Erythrina variegata
- Ficus aurantifolia
- Plumeria obtusa
- Fitchardia pacifica
- Euphorbia cantharicus
- H. atripurpuratum
- Sydium guajava
- Plumeria rubra
- Aracacra excelsa
- Discalips wilkesiana
- Sophora tonenta
- U. Tortefortis argentea
- Musa sapientum
- Asplenium nidus
- Acantha taccada
- Crinum asiaticum
- Momordica pepelina
- Hymenocallis littoralis
- Cryptostephos quinifolius
- Catharanthus roseus
- Euphorbia cantharicus
- Hedilanthus tilymaloides
- Polycias quiltyi
- Hibiscus rosa-sinensis
- Nephrolepis exaltata
- Zephyranthes rosea
- Cocosola upifera

Kurajalein
- Calophyllum inophyllum
- Polycairus scutellarius
- Cofficium variegatum
- Alocasia macrorhiza
- Rhoeo spathacea
- Caladium bicolor

Seem in housing as:
- Hibiscus tiliaceus
- Philodendron (spp.)
- Polycias fruticosus
- Ipomoea ob. basilicaria
- C. spec. x. serpentinum

Seem in nurseries:
- Polycairus sp.
- Phylidiophora aurea
- Monstera deliciosa
- Pseudanthemum cantharei
- Z. bicola
- Z. philodendron
- P. scutellarius
- Ficus benjamin
- Terminalia catappa

Polycairus trichocleata

Pagon beach lab. about 200 m. of pier - beach rock exposure.

Roll 1: east side exposure.

General views looking north. Close-up of place at low tide where original sample was broken off. Sample at about 5 m. of same place.

Sample taken at water level at 8:45 a.m. (no. 1)

Roll 2: first 3 exposures close-up of slab with solution pits a little below high tide level. Three pits are slightly undercut but show some signs of abrasion.

Sample 2 is from the vertical edge of this slab.

Sample 3 (same piece) is from the horizontal surface of slab.

Sample 4 is from the lining of solution pits on surface of slab.

Sample 5 is from abraded polished surface of lower layer in this series just below the slab. Polished white.

Kwajalein Atoll

Sample 6 is a piece of a polished piece of coral wedged between two large slabs.

Sample 7: pebbles from a small pot-hole solution pit.

Littering and roots occasional in pit and uneven.

On windward beach about 200-300 m. from south end.

Broad stretch of eroded beach rock.

Photos: General views / south / north / close-up of solution pit. The pits sampled are at just below high tide level, not a scarcely undercut. Other larger ones seen that were undercut.

Sample 8: various pieces of inner surface of one of these pits.

The general surface of this Beachrock is darkened by algal. Something that produced various white marks.
on scratches on this page.9 looks like biting by flies. Sample 10 are many speckles of white. Sample 11 near high tide level very pitted with smooth gray somewhat overhanging Huts. Sample from arithmetic surface.

Most of the interior of this island is open, once World War II. In 1950 there was a deep blanket of Thymoeus per-capitae and Wedelia. Now it is mostly Wedelia. There are no shrubs or trees coming up through it except old ones that were there before the clearing.

Thermophila is the dominant grass under trees in most places, but sometimes Lepturus is more important.

List of plants seen

* Wedelia litoralis
* Thymoeus per-capitae
* Pisonia tuba
* Lomatia taccada
* Vigna marina
* Gomphocarpus angustifolius
* Thiqukas tiliaceus
* Gnettus species
* Ipomoea obtusifolia
* Lepturus repens
* Guarea involuta
* Tephrosia acida
* Pandanus tectorius
* Cocos nucifera
* Timandra cymosa
* Cassytha californica

The only birds seen were Vella herons, one blue, one white, sitting together on an old steel tripod near the center of the island, in from the lagoon. Shag, and two wandering Tattlers in the seaward lagoon. One brown booby sitting on buoy on the way back to Kwajalein.
Hibiscus tiliaceus—dead
loosely and irregularly
branched tree to 3 m., call
leaves orbicular, entire,
whitish beneath,
shortly pointed
stipules of long caducous
leaves an irregularly
ring around the stem,
cymes few flowered,
with a pan of stipules
fracture by subtending
each pedicel; pedicel
curved downward;
sweet campanulate
involved with 10
short teeth, closely
appressed to calyx.
calyx lobes lance
ovate acuminate
yellow, campanulate;
collum campanulate,
yellow with a deep maron
center, the yellow part
turning dull red before
colla falls,
staminal column
anthereiform to near base;
yellow, style branche,
and tip of united petals
escent, stigmatic maroon,
stigmas capitale, small,
very dark maroon.

Kwajalein
Aug. 14 - Kwajalein led
greasy ditch from
air strip to tank farm,
lined with luxuriant
growth of Cyperus poly-
stalks, with
Delphos, Elechionis,
cyperus doxas
Digitaria of tinniens
Cochlospermum
Trisac, Stachytarpheta
jamaicensis
Patch of Bidens raf.
in field along airstrip.

One small tree Syphodea
campanulata, behind old
terminal bldg. about 1 m. tall,
flowering.
Plumeria and papaya also
persisting.
The following recent
introductions have
remained, now become abundant,
at least locally:
Paspalum setaceum
Cyperus rotundus
C. poly stalks
C. compactus
Euphrasia thymifolia
C. hirta
Vernonia cinerea
Trisac procumbens
(to p. 22)
Aug. 14 - Enubey Islet
Small tree, 7-8 m. tall, flowers yellow, turning red, center deep maroon, nodding.

36 Chloris occasional

37 Cyperus polystachyos common

38 Cyperus compressus common

in shallow ditch, near air-field

39 Cyperus rotundus common

40 Stachyta phila jamaicensis occasional

41 Eleocharis very common

42 Eleocharis geminata occasional

43 (lilac)

44 road-side near air-field

45 Eragrostis common

46 Eragrostis setaceum common to abundant
48046  Emilia javanica (Burm. f.) Rob.

2 47  Chloris
locally very common

3 48  Cyperus rotundus
common

5 49  Catalana
occasional on stone
gravel

back of old terminal Billy
spit, they can propagat
single planted tree

Aug. 15 - Kwajalein Island
leeward side of air field

3 51  Lepturus
forming a sparse mat on
compacted coral soil

5 52  Lepturus papuana
forming dense mat on
coral road bank

5 53  Physalis angulata 1.
occasional on road embank
ment and around country club
grounds.

5 54  Physalis angulata 1.
occasional on road embank
ment and around country
club grounds

5 55  Ipomea batatas (L.) Lam.
in coral sandy soil at
country club, facing away from sea.
(Cont. from p. 17)

Eclipta alba
Eclipta alba
Desmodium canum
Dentella repens
Cynodon dactylon
Paspalum distichum
Hedysce, eurya
Heliotropium ovatifolium
Equisetis sendtii
Equisetis sp.
Bidens leonforty (abundant east of field)
Portulaca oleracea (abundant field)
Conyza canadensis (plentiful
abundant field)

The following have remained
scarce, or local, or have
become more restricted,
or disappeared.

Emilia sonchifolius (not seen)
Bluchea indica (very bad)
P. odorata (not seen)
P. fosbergii (not seen)

Conyza canadensis (not seen)
C. odorata (not seen)
Mimosa pudica (not seen)
Stachyurus lanarinus (practically
Cyperus odoratus (not)
for)
(Lincoln C. odoratus (not seen)
Lonchus odoraceus (not seen)
Enhydris prostrata (not seen)

Kwajalein, Atoll

On fishing trip west of
south half of atoll,
birds in some number
were seen over schools
of fish. Noddies, white
capped noddies, a few
puffins,
terns, and an assortment
of gulls.

party caught
(yellowfish tuna (not)
1 washburn (not)
1 "rainbow runner"
13 snails

A moderate trade wind
breeze was blowing, a great
improvement over the past
3 days, which were dead
calm, hot and sticky.
Aug. 19 - Ligan Islet.

This is really a islet, connected by an isthmus, and the southern most has a small satellite lagoonward.

The isthmus is really double, two strips enclosing a fair-sized lagoon.

Lagoonward is a large rubble flat as long as the entire islet. The lagoonward side of this is an even and a strip of consolidated rubble about 20 m or so wide. The inner part of the flat is lower and not consolidated, and scarcely dry at low tide.

Sample 12 was from the notch on a niggerhead, at the inner edge of the consolidated strip.

It was muddled with a living cinement (specimens).

Sample 13 was from the flat surface of the consolidated strip. Its upper surface is sheared and seems representative of the

general surface of the strip, except that it is a smooth piece. Its under surface was more or less sheltered from light. The cimento, lined in small colonies on this surface, continuing golden lacking.

The seaward side of the isthmus is a double, anticline-like series of beachrocks.

The lagoonward part of many rather thin beds of a coarse sand texture, not very well consolidated. The seaward side is of fewer beds of very coarse consolidated rubble. No solution pits many of it. The seaward strip of beachrocks extends not only along the isthmus, but along the north islet, and probably the south one too, but that area is altered by the Japanese construction of a

knap.

The north islet was briefly examined. There is a seaward fringe of sea grass, then a strip
Planted to coconut, then a strip of Chichewa forest, then old and large
Pisonia with quite a bit of young Pisonia.

Birds are fairly numerous here. Wandering hawks on both seaward and lagoon
side, ruddy turnstones a lagoon flat, a number of fairy terns in the
Pisonia forest and in edges of it. Common noddy,
A tern shaped something like a seagull but
with a light gray back
of them flew by. First,
making a harsh noise on seaward side did not
see them very well.

Kwajalein Atoll

Other plants seen were
Moringa citrifolia and
Lepturus reficius, neither common, and Britton's (new)

Kwajalein Atoll - Nursery

Plants seen: Terminalia catappa
Blepharocarpus zoe
Pisonia grandis
Wedelia tubiflora
Musanga saphirem
Alocasia mansonii
Cassia alata
Zepoliumum nodos
Polyceras quillfulei
Pedilanthus stiphisilvus (variegated form)

Cardiospermum equatoriopodol

Espohips, epaphrhopis

Basin Hebeocis tubae

Philodendron

Philodendron (large leaf 4)

Philodendron (small leaf 2)

Philodendron

Philodendron (large leaf 4)

Philodendron

Philodendron (large leaf 4)
Aug. 15 - Ligan Islet
Terminalia sericea
in scrub back of lagoon beach

Intsia bijuga
narrow seeded vine in edge of coconut plantation

Polyodium scolopendrium
common on coral boulders in coconut plantation

Pepitamia denham
very local in small opening in lagoonward scrub back of beach.

Aug. 15 - Kwajalein Islet
in nursery

Plantago major L.
very local weed

Cryptostegia grandiflora
planted

Laburnum tenuifolium
planted

Pilea microphylla L.
weed on ground and in pots

Psidium guajava L.
planted

Euphorbia glomerifera (Mill.)
weed

Asteria? (Meliaceae?)
planted

Wedelia triloba
planted, growing vigorously

Kwajalein atoll
sterile shrub

shrub 3 m. tall, sterile

shrub: lactiferous; flowers purple, corolla throat flatterened

shrub; flower pale greenish

leaves oppressed to soil

shrub; lactiferous; flowers purple, corolla throat flatterened

shrub 3 m. tall, fruit immature

shrub; sterile

(flowers said to purple, trumpet-like, prostrate, heads yellow)
Rhaphidophora (Monstera?)
planted

around buildings
Scaevola taccada (garden?) Rob.
planted as ornamental
(native to atoll)

Desmodium canum
abundant in lawn

Kwajalein atoll

heavy vine, leaves
without holes, fruit
immature

well-formed densely
branched shrub 4 m
tall; flowers white;
ripe fruits white
pickled flowers
flowers maroon
(not some simple leaves)
1946

Aug. 16 - Left Kwajalein 7:50 a.m.
arrived Honolulu about 9 p.m.

Aug. 19 - Left Honolulu at 12:30
Aug. 20 - Arr. Tokyo

Aug. 27 - Left Tokyo 1:30 p.m.
arr. Nikko 3:30 p.m.

28 - Left Nikko 5:01 p.m.
arr. Tokyo 7:00 p.m.

29 - Left Tokyo 7:30 a.m.
arr. Anchorage 1:00 p.m.

31 - Left Oshino 3:30 p.m.
arr. Tokyo 6:00 p.m.

Aug. 4 - Left Tokyo 7:30 a.m.

7 - Arr. Kyoto 6:30 p.m.

10 - Left Kyoto 7:30 a.m.
arr. Seoul
Aug. 27 - trip to Nikko.
Crossed Luniita River - filthy.
As soon as city begins to thin out the vacant spaces are filled with rice patches in varying stage of maturity and gardens. A few weedy patches - Congo abundant,Miscanthus.
Phragmites, along canals.
A round house.
Ficus carica
Quercus sp.
Photinia sp.
Punica sp.
Platanus sp.
Paria sp.
Pachysiphism.
Salix sp. fablonica
Hamnea sp.
Cinnamomum camphora.
Cunthia sp.?
Chamaecyparis
Hibiscus syriacus
Acro palmatum
Taria a Chamaecyparis
Ganbo
Helianthus annuus
Eucalyptus?
Cyperus japonicus
Catalpa
Paulowna
Alcea rosea
Ailanthus?

Honsyu
In garden:
Onion
Maize
Lard
Beans
Eggplant
Sweet potato
Milo, maize or the high
Soy beans
Manga
Hibiscus of succulentus

Gradually the land becomes agricultural with scattered houses and villages, mostly rice.

Kurihashi
The River - broad, sandy, Phragmites, large floods of what looks like cattle excreta.

This entire region is an immense, completely flat plain. Rivers and streams are contained between levees.

After 50 minutes of riding, a slight relief
JAPAN

1966

appears. Very slightly incised plain, becoming more and more rolling
thickets and probably planted patches of low wood or bushes.

Mountain can be seen on left,
then a few small wooded
hills - probably planted.

Mt. much closer on
left.

Hammocks across seen.
Then Mt. much more
distant on left and ground
flat again.

Kasemba

Mt. closer again.
Another river - broad
meandering bed with shrubby
facades.

Wooded hills close by to
left.

Negori

Moriyama,
Continues to skirt base of
hills.

After one hour and 10 minutes
of travel the river enters the
hills. Rice in flat valley bottoms
and on terrace a gentle edge.

TUESDAY

Ornamentals (etc.)

Lagerstroemia indica

Most slopes wooded.
Then cut into a medium
sized valley.

Kita-Kamag

Valley narrows toward head.
Hides very steep
and wooded. Forest planted,
in row, clean felled.

Etaga

Valley winds somewhat.
Cultivation toward sides
diversifies, mostly rice

Toward center.

Then Mt. is in a deep cut,
then another valley, or a
meander of first.

Then cut into edge of
plain again. Woods and
thickets quite common

Planted Thuja, etc.

Rolling land again.
Terraced. Patches of bamboo.
Woods locally common

much Cryptomeria.
A magnificent double row
of old Cryptomeria.
Nikko

Photo: Two lodges of farm house near Nikko.

Bed from hotel window.

Nikko - Daiyakute, Steam running through Nikko is clear but certainly carries some sewage. The banks, and very narrow flow, plain tangled with manly kinds of weeds, grass, and Miscanthus, Sativa, etc. and shadily Salix and Alkmeneum.

In the entrance to stay a big fastigiate,
secure a bush type coniferous
was growing in a pot in an ornamental. Also a handsome Selaginella
with large sub-monster.

Aug. 28 - Nikko

Photos had fern in front of hotel and from hotel windows.

Several bed in botanical garden.
The botanical garden in largely planted in a more
less natural fashion, mostly wooded, but
with some open lawn, ponds, and beautiful
marshes. A fine alfip garden.

Around temples many magnificent cryptomeria
and Hinoki trees. Gives the character to the entire landscape.

Left for Lake Chuzenji at 2:50 p.m.

Miscanthus very common along road. Flowering.

Very rocky river bed. Stalks, some mixed evergreen forest, some mixed broadleaf forest. Along toll road mixed broadleaf forest. Many switchbacks. Landscape edgy scarred by toll road. Forest changes composition upward. Fagus become dominant, at least locally. Even so, forest is quite mixed. Few ferns near forest bottom, point, top of funicular hill of lake. Kegon falls is a typical vertical drop as often
found in volcanic region.
flowing over a dam of columnar basalt. The exhibit of columns is striking, and around the basal unconformity of the flow are numerous sheets of water forming a bridle of tiny falls around the base of the big one. Below is a set of cascades.

Around Lake Chuzenji, mixed broad-leaf oak, Acer, Ulmus, Quercus, Pinus, Betula, Taxus. One of commonest woods is Rudbeckia laciniata. Also another biennis.

Photos: 36 in of Ryuzu falls + frost on the leaf.

Shores of Lake Chuzenji rather mannered by buildings along highway. But general view even in semi-Яв is magnificent. Along old toll road the forest is young but has to some extent reached the scar. Very rich in species.

Aug 30- trip by train Tokyo to Karakura, just south of Yokohama, in area of deep dissection of low plateau - possibly 500m. with steep edges, flat-bottomed valley - before Takaka. These little hills are mostly wooded. Limes, etc. the flat narrow valley bottoms are cultivated.

Similar terrain to Ofuna but mostly brush a bit for the m.

Ashima D. below Karakura Hotel - Low irregular forest of Prunus, Ulmus, Cornus, Camellia, Ligusticum, Clerodendrum, Podocarpus, Viburnum, Malus, planted patches of Cryptomeria. In places where the forest is continuous it is a young, unintercalated forest with trees to 10 cm, 15-7 m tall, with a dense layer of lasa 1-1.5 m. tall.

Vine, such as Parthenocissus lobata, Paeonia sp., Spiraea sp., Clematis (close to C. virginiana), Humulus sp.
42 1966 Japan

Aug. 28 - Nikko

4 28 07

1. Ophiopogon compositus
   occasional under cryptomeria
   in temple grounds

Aug. 28 - Lake Chuzenji,
  Nikko National Park
  in herbaceous ground
  cover in disturbed deciduous
  forest

2. 70 Epilobium
    in tiny dry rivulet

3. 72 Ranunculus
    common locally

5. 73 Geranium
    occasional

3. 74 Polygonum
    occasional

43 Honshu

erect; flowers white.
erect; flowers yellow.
decumbent; flowers pinkish;
white
semi-vine-like;
flowers pinkish-white
Aug. 31 - Mt. Wash. Volcano
Ophirama), in caldera
rather rough lava
field with Polygonum
suspensum in cracks
also Miscanthus and
an abundant
moss.

These are a large
Psilotichum, Hydrangea
and Prat. Alnus
(Pseudotsuga sp.
Weigela 2/27)

The Polygonum, esp. is
not confined to cracks
but colonizes freely.
Moss on fine material
accumulation.
A number of other
plants are common along
the horse trail.

On the newest flow
typical as, a very
Shame coloration,
magenta Polygonum.
This very abundant
in a strip along the
trail.

Around summit
building a few cliffs
with Miscanthus and
Plant of Polygonum.

Just below summit,
the old surface abundant
Miscanthus and consideral
Polygonum. This old surface
between newer flowing
extends down to olders
of 157.

This surface in patches
with an accumulation of
fibrous elastic material of
all sizes filling the
cracks. Abundant
Miscanthus and
considerable Polygonum
but no other plants
(except one small shrub
along horse trail), but some
moss and a common lichens,
prob. young Stereocaulon.

Coming up from below, the
scrub forest with lops
layers gradually become
better and more dominantly
lava then shrubs will
show. Miscanthus coincide
Miscanthus in patches
and distributed in the
scrub. The composition
includes many of the
trees common with forest
below, but Hydrangeas
the
Left, 4 - Tokyo - Matsumoto by train.
Leaves Tokyo 3 a.m.
Outside the city, mainly cultivated land - rice, gardens.
Along river, some wet land with stands of Polygonum.
Hachiroji.
Then some low hills, with woods and thickets - flat valley bottom largely covered by houses and gardens.
Hills soon become very steep, covered by plantation of conifers, even on very steep slopes. Some broadleaf trees in canyon bottoms.
Long tunnel.
Very mountainous landscape.
Slopes planted to trees.
A large valley surrounded by mountains - Hakamika.
Several tunnels, then another valley, not so large.
Forest on slopes, mostly large.
Broadleaf (beech), some conifer plantings.
Some pine patches in.
Flat valley, near terraces.
A land, rice, also gardens.
Flat valley bottom deeply incised by nine gorges.
Thirteen Bamboo vertical walls of gorge. (to M 50)
1966 Japan

Aug. 30 - n.e. side of island, near Kowaki-en Hotel
in edges of forest

48 075

Paederia

common

76

Tamarix

occasional

77

Euphorbia

common in doryanda

Aug. 31 - summit caldera of Mihara-yama
on rather rough basaltic lava

78

Polygonum

very common

79 (grass)

rather rare

80 (grass)

on accumulation of fine material

81 (grass)

occasional to common on accumulated fine material

Oshima, mouth of Tokyo Bay

vine, foetid, aromatic
flowers, pale lavender
with deep purple center
- erect, fruits red
- very prostrate, leaves dotted

spreading, low herb
- flowers white
- tufts
- bright green
1966 Japan

Tunnels.
Yamagawa. Incised flat valley bottom. Flat terrace cultivated, garden running somewhat on slope.


Scattered beans, tomatoes, egg plants, radishes.

Many big patches on steep mountain side, but they seem to be forest regenerating in plantings.

Kirsch
Deep gorge walls are wooded.
Mt. becomes less steep, generally, but some spectacular cliffs in sight.

General pattern in these valleys is a flat valley bottom between mountain with a deep gorge meandering back and forth across it, with cultivation on the resulting terrace fragments, forest on gorge walls and mountain slopes. The slopes show a mosaic of patches of forest (mostly planted) of varied ages.

Otaki.

Kirsch, pears, peaches, etc., very common around homes. Valley being very badly scarred by road construction.

Hanshin


Valley narrows to a gorge, then widens again. Miscanthus scattered, flowering. Batacums common, forming blanket over slope and covering bushes, flowering. Long tunnel.

Hakone.

Valley bottom not very flat, gentler slopes cult. Gorge deep, wooded. Forest on Mt. slope mostly beech. Katakuma - merged from tunnel into very wide valley, other side not visible in haze.

On gentle slopes at foot of Mt. extensive vineyard; pea, peach, orchards, etc. Japanese willow densely populated valley.

Yaman.

Valley bottom wide and flat, with cress of intensely cultivated mostly vineyards and orchards - peaches, apples, etc. scattered clusters of bamboo, sandalwood trees.
Yamanashi-shi
Crossed river with wide
boulder-gravel bed, enclosed
by levees.
Some rice patches mixed
with orchards and vineyards.
Lower slopes of main valley
side (east) mostly clean
and cultivated.

Isawa
Still extensive vineyards,
almost 100% of cultivation here.
Kamezato Vineyards on slope
as well as on flat land.

Kofu - large city.
As city thins out, open spaces
are mostly in rice, a few
vineyards and gardens. Some
mulberries. Outside of city,
rice with patches of Almond
and pine. This part of valley
is low and very flat.

Gentle slopes to right at
foot of city. All in vineyard.
Rolling land in

Plain valley bottom of Kamanashi
river mostly in rice. Low hill
with many houses.
Country becomes more
hilly on other side.
More rice patches
alternating with gardens
and woods. Bamboo.
1966 Japan

Climbing again. Rice terraces and gardens, wooded hills and mountains farther away.
Flowers as much more abundant and colorful in this mountain region than in Tokyo.

Fuchsia, persicaria, hibiscus, lilium, pokey, cosmos, heliopsis, rudbeckia, monarda, kawagishi.

Vallies narrow, slopers more steep.

Tatsumi.

Small flat valley surrounded by steep wooded mt. Many areas of timber have been recently cleared, in vertical strips.

Valley bottom and lower slopes terraced in rice, etc. One patch of tagetes.

Again.

Kogionji - horrible industrial city. Flat valley, with orchards and vineyards, rice gardens, (tomatoes, soy beans, sa, mums, heliopsis, lilium)

Weedy lots, dominated by longza. Rows of soy beans on levees between rice fields.

City gets thicker toward Matsumoto, but still considerable rice.

Matsumoto - Kamikochi by bus.

Left M. at 1:15 p.m. 600 m.

Rice fields with soy beans in lea, some soy plants, tomatoes, carnations, tobacco, beans, mums, zinnia, chrysanthemums, Japanese.

Very soon the valley narrows between steep, high mts. Densely wooded. Lower slopes, mostly mums.

Spectacular canyons, many hundreds of m deep, densely wooded, mostly broadleaf, some taung.

A series of dams, as being built here by Tókyó Electric Co. Will destroy this magnificent scenery completely.
1960 Japan
Dept. 5 - Kamikochi

In flat valley bottom, a few lawns with some admixture of Lilacs, Betula, etc. and a complete ground layer about 1m high of grass.

On lower mt. slopes just above flood of valley, the forest is largely high with admixture of other coniferous (Abies, Pinus, etc.). Betula, Fagus, Fraxinus, Liriomyza, with solid ground layer of moss.

Wherever there is a stream or a strong unevenness in ground there are other plants, such as Dryopteris, Calamagrostis, Blechnum sp., Carex aquatilis, Cinquefoil, etc., with a rich variety of flowering plants, including Epilobium. On bank there are many rounded pebbles and small gravel. The river bed is broad, and very much filled with gravel and rounded gravel. Salix and are common in river bed.

Myrtis Unica are establishing little ponds with islands - islands.

Tashiro Is. - Azusa R.
Osulloc
Arabin undata
Euphrasia rectangula

Hirayu Pass
1694 m.
1966 Japan

Sept. 5 - Azusa River valley
above Kamikochi
on loose gravel soil
in predominantly conifer forest.

49682
Engelmann

49683
Engelmann

49684
Ceratophyllum
ground cover tree in forest

49685

very rare on cut bank, above trail

49686
light violet

49687
ribs occasional

49688
Azaleum

49689
rare

Sept. 5 - Kamikochi, in
Azusa River Valley

49690
Potamogeton multifidum
in semi-open forest in
grass

49691
in semi-open forest in grass

49692
Polygnotum
in semi-open forest in grass

very rare, solitary, flashy, scarlet.

flowers violet.

steps slightly browned,
ground green, horizontal.
1966 Japan
Sept. 6 - Slopes of Mt. Naikun
The general vegetation here is a mat of Primus
pumila, with prostrate stems up to 1.5 cm dense.
and short ascending branches. The whole form
0.5 to 1.5 m deep, very dense.
On ground is a sparse &
dense layer of Blutia, Rubus,
Vaccinium vitis-idaea, Gaultheria,
etc. Thick mat layer.
In slightly open spots mats
of Empetrum?

On the abundant rock
slide and talus are various
other plants.
Where rock actively sliding,
there is a heath of Empetrum
Dryas, Ledebouria, Arctostaphylia,
Rhododendron, Carpathia,
Berberis, Geum, Gentiana,
etc. Most layer.
turf vegetation locally
in talus and talus.
Problem in heath is
erosion from places where
peat and soil are further.
Not certain if all the
badly eroded areas are
of this sort not.

Takayama City. Lunch
in a family mansion
converted to a restaurant.
Also is a family museum.

Takayama to Gifu by train.
By Takayama 230 p.m.
Valley bottom plant perhaps
1.5 m wide, planted to rice
between houses. Houses
with wire of soap beam.
Valley narrow, rapidly
some gardens with habi plats,
tomatoes, cucumbers, cabbage,
chinese cabbages.
1946 Japan

Sept. 6 - Aizu River below Tashiro-ike

49°07' Melampyrum
along road in gravelly soil

Sept. 6 Hinayu Pass

Lyssopodium clavatum
on road cut

Sept. 6 - Mt. Norikura
upper slopes, mixed
heath and Pinus pumila scrub

Companions
occasional, mostly on mineral soil

Rubus
common at edges of meadow

Rhododendron
very common generally

Phyllodoce
commun in heath, slopes

Trisetum
very local on sub alpine talus

Vaccinium vitis-idaea
abundant generally

Dryas
common in heath

Empetrum
very common in heath

Cassiope Lycopodioides
local in heath

goss

Nagano Prov. - Gifu Prov.

1800 m Gifu Pref.

Flowers deep blue.

Dwarf shrub, spreading, fruit erect.

Flowers white.

Flower white, cut

almost all plant scar, stalk,
prostrate, forming mats, leaf scar erect,
tails no color.

Forming mats, mostly sterile.

Fruit reddish.

Metal, yellow, range in center, falling very readily.
Loiseleuria procumbens?
on healthy boulder at
edge of pine scrub

Gifu Prov.

Fumigate, forming
loose mat.
1966 Japan
(from p. 66) The follows narrow canyon at head of valley between steep hills with mixed forest. Widens somewhat. Again. More rice small terraces. Hills on side cleared in patches replanted to feed RR makes a loop in this part of valley. Goes off to left through a small side canyon, climbing rapidly, then through a long tunnel, still climbing out into a canyon which goes down between hills planted to pines and other conifers, rice in its flat bottom, widens rapidly to a small lumbering town - Kiguno.

Walls become steep and very rocky, still wooded. Then lower, still steep.
Flat valley floor becomes incised. Early walls below
become benches partly covered by bamboo.

Honshu - Gifu Pref.

K dosesaka - 2 tributary canyons enter here, one from each side. Reservoir below.
Benchies on one side in other quite wide. Here they become sloping, terraced. Forestry planting on steep side planted in vertical rows.

Furo
Hida-Agiran, valley much wider, benches sloping. Rice.

Long winding reservoir. Then narrow rocky canyon. Bottom then incised flat bottom much bamboo.
Another reservoir.
Hidaka-magawa
Canyon with narrow rocky bottom.
Ratner wide, wall again, with several benches.
Tunnel.
Shinakawaguchi.
1966 Japan

Valley greatly widens out deeply incised flat bottom. Bamboo on cliffs. Hills above, slopes more moderate. Rice,
shinoba
Valley broadens very much, into a cultivated plain. Winding river comes somewhat incised into it, dammed to form a reservoir.

Mostly in rice, but
Matsubara abundant, gardens also.

Lower main terrace level, perhaps a m down.
Mino Ota
River goes out of this plain through a narrow canyon with rocky wall on one side, wooded slope on the other, narrow flat bottom. Widens somewhat. Then emerges in a wide plain again.

Yuzum
Some isolated hills in the plain. Rice with patches of
Matsubara

Left: Gyfun 9.45

Nagoya Castle, with Nelumbia & Hydrocharis abundant in moat.
Holmamnthus common as street tree.

Left Nagoya for Kyoto 3:15, via Lake Biwa.
Large flat rice areas.
5 km distance from Nagoya is an area of truck farming. Met Nagara R, once west of it (96 hip) an area of truck farming and
Matsubara. W. Jap R, mostly rice, soy beans or vegetables.
Climbing through low
pass between Niagara delta and Lake Bive. Hills wooded. Attractive traditional architecture. Terraced rice in bottom of valley. Much EChrismon in forest, but many other trees too. Pinus, Tulip. Very beautiful slow but rugged wooded hills with narrow rice area between them. Considerable bamboo. Delta valley—very wide. Rice harvest has just started. Highway lies well away from field at foot of hills. Hills are wooded. Patches cleared. Forest here largely pine. Wide cultivated plain. Edge River, wide gravelly channel. Patches of pine plantation. Then large area of rice, then low pine-covered hill. Then rice. Then more low pine-covered hills. Then hills that have scrub and thickets, taller woods in ravines. Then more pine. For considerable distance the landscape is pine-covered hills with occasional ravine with flat bottoms and rice terraces. Rice here is very young. Kyoto (a small city on Ni on plain, hills on left.)

Taka River
Osaka City; Kyoto

Left 16 a.m. trip to Osaka-Takayama. Cloudy, practically no visibility. Delay in Takayama station.

A bit out of Takayama, it is a crescent shaped island, not very high. Looks like an old cone. Much worn down, convex side indicating course. Dry, at least path, grass not seen very well.
Sept 11 - flight from Seoul to DMZ and along it, in small 'man cub' plane (sitting in M. middle seat.)
The sky is overcast, but horizontal visibility, good to south, less to north.
To fly north to Han R. estuary then NE generally along Imjin river, but sk. to north of it.
Some cultivation in accessible areas, even in DMZ. More fields both recent and left from Korean war. These unmapped are found generally.
Maps - AMS 1/60,000 "DMZ sheet - 1/2 NSE L-652 - Ed.1-AMS (EE)
4:30 am entering, with purple-scented showing DMZ + various aviation information.

Take off 10:03 am.
W of Han R. flat land in solid rice cult. gentler slopes of hills. Other cult steeper slopes and summit.
Thin scrub, some grass, showing through, some red bad ground.
Villages mostly on lowest hill slopes.
E. of Han R. same. Many hills protruding through blanket of alluvium.
To of these apparently steeple, steeper ones yardly scored thin to thick tree growth, thickest in ravine and in certain slopes. No apparent pattern. Erosion very bad in many hills. Some the apparent, similar well world.
Crossed Ringlung R.
Matscba hills with strip of alluvial rice land between them. Cultivation in place and base, villages also.
Main can climb stream to another joining it. Hills much higher more grassy, now thick.
Main can to left. Considerable erosion. Small rice.
Hills becoming higher. Imjin river, E. of large island. Island sandbar more obviously washed by floods. Hill along Imjin greener, and with less obvious erosion. Hills west of Imjin much more forested.
Clouds thick to W.
Plane turned back, but on course well to east of Han R.
Hills here are much higher, with less well land between, and to right of course still higher and more wooded, less rice and almost no other cult. Few village. Following generally the direction of Han R. But a mule to east. Some hills very well forested, all very obviously cleared, somewhat grassy & scrubby. Hillsed somewhat east, some very ragged mt. in distance to S.

Large valley mostly rice and very low hills, to left. Some extremely low eroded hills on left. Vying to right, cross valley of Han-ell-on R. Many small hills. Hadly eroded rice between Mts. like east of valley, as extremely bare and eroded, fairly on lower side, sandy, mudges bare and eroded, a few small bushes. Valley of Pochen-ch'on

Hills now partly wooded, very slightly, and locally

mt. to east of this, well wooded, mostly slopes denuded and ridges badly eroded down. Trails of rice up about 1/3, of way to summit, scattered cleanings. Flying m. e. forms higher mts. Where such Chin Valley mts. m. e. side wooded, but with many cleanings, even to summit. Most cleaning planted, tree in regrowth. Lower slope most cleanly. Still going east.

Hwang-cho River. Many installation, considerable rice and other cult. the on lower slope cleaner, more and gradually. East of this hills mostly denuded or with patches of wood, thicket, cleaning, mostly cultivated, some grass. Even to Pyong Mt.

Paul Chun-jang Valley rather narrow, steep, walls, intricate system of tributaries, gorges, gresen.
When we reach it,
we turn back along the
tributary. Hills and gullies
of cultivation less wide
even on steep slopes. Enemy
does not seem so apparated
here. Flying across large
loop in line. Dam below
on left. Small area of
teraced near flat area of
mountain stream.
Must stream bed very
steep + rocky. Pathway in
left. Not on right.
Perhaps 25-30% wooded
in regrowth. More wooded
as we progress. But some
wide terraced valley.
Few slopes. Clear cut
fallow.
Returning to Kinfe. Middle
slopes with Sparse forest
scrub. Upper wooded.
Paths along many ridge.
Many small round shrubbery
with little vegetation. But
with something, perhaps
a rock, rift or broken rock in
middle. No thermal springs.
Back into broad valley
again with extremely dry
hills. Large vine
with areas on left then
entering narrow steep sides

canyon. Much rice and
some other cult. in
wide flat. Many higher
cemetaries on upper slope.

*Highlands

Very rocky into,
just crest of scene,
Bedrock grey, apparent,
metamorphic. Strange
scree, flat in ravine.

K debounce

Wide valley of Han on
left.

Following Han R. Mud
sand exposed in trail, many
several wooded hill is
city. But no more rag
with building crowded
so no shore shown between
them.

New Bridge. Industrial
area on left.

Forest in hills s. of Kinfe.

Mostly open scrub coast.
Reached Kinfe at 11:05, landed
at 11:02.

Large wet plain, still
semi-imuvated fine field.

With many stumps. Mostly
a rest rice field. Few areas
seem not to have rice,
but it have some small
cultivation pattern. Possible
harvested rice very muddy now.
Dr. Hong says that the wooded areas at the east part of our flight are protected from fire by gun, while those in middle valley that were so badly ended are burned frequently by farmers. He says also that in the ROK-controlled part of DMZ fire as set, both by ROK and Communist, depending on direction of wind to damage other installations and flush out infiltrators. This is not like in US-controlled sector.

East coastal area warned by currents.

Forest in mountain area in north, near DMZ, said to be largely quenea, bamboo, further south and west, largely pine, densifying. Most of hills are granite, but some sedimentary and limestone, on east side.

Sept. 12. Left final 8:50 a.m. for DMZ. Hills with sparse scrub pine in fort. This gradually increases in stature as we go north and hills get longer, also becomes more dense. In places closed forest, always dominantly pine, but with some oak, fir, etc. Lombardy poplar common around rice fields, often pollarded.

Cult. rice
sorghum
sweet potato
soy bean
squash
mung
red bean
asparagus
Chinese cabbage
horse
oat
wheat
barley
wheat
barley

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Munson
Hills set. Munson and
Imjin R. are low, badly eroded
covered by an open scrub
of small trees. Much in
bottom land of river.
Bluffs on other side very
well wooded. Forest closes
main road.
Truth of bridge many dead
trees.
Freedom Bridge - Tokhao
Forest with of it, a much
lying invaded by trees;
Phragmites locally dominant.
Probably an old rice field.

Across toward DMZ can
large open areas, partly
in a bright green grass,
partly in Phragmites,
scarcely invaded by
trees. Central hedgerow
of trees crossing it
hemi-open covered with open scrub patches
thicket. Very low
hills scattered in the
open plain are mostly
covered by scrub brush, possibly oak (leaves gone).

Mountains in distance
on NK side very rugged.
Numerous small ones,
and on a few large ones to be
seen on NK side.

White herons, seen flying
north toward DMZ.

Phragmites, invaded by
Calix sp.

3
fo

Observation Post Magie
Top of a hill covered by a
closed scrub 3-4 m tall
of several species, distant,
Kaesong, Korea.
Korea

Sept. 12 - North side of Jujjin River, just above Freedom Bridge, Tokkate.
around military installations

48106 Lespedeza persisting

07 Eragrostis occasional on grassy slope

08 Digitaria on stone wall

09 Digitaria on steep grassy bank

same - on flood plain of river, probably formerly alfalfa field.

10 Tetaria locally common

11 Tetaria common

12 Dactylis DeLustre

12 Humulus abundant

13 Equisetum arvense very common, recently inundated.
same - on low hills along old road into Chiche.

14 Digitaria occasional

shrub 1.5 m. tall, branched, drooping, many from near top of stem; flowers magenta, tufted, culms erect.
racemes drooping, green.
racemes erect, bristles yellow.
twining, tangled with other vegetation, pollen produced in clouds when plant is shaken.
1966 Korea

5 17 Plantago
  common in road

13 Lepedeza
  common

18 Xanthium
  occasional

Polygnum
  occasional

Lactuca
  rare

Echinochloa
  common

Potboellia
  occasional

Quecous
  occasional

Elacagnus
  occasional

Aster
  occasional

Polygnum
  common on bare soil

Cephalium
  occasional

Sept. 12: Observation Point Magic Hill just m.m. of end of freedom Bridge, north of Jones R. tall scrub on hilltop

23 Eupatorium
  occasional in edges of

Campamula
  rare in

slim 1.5 m. tall. flowers magenta-purple.

seed, flowers purple.

flowers pinkish-white.

flowers dull yellow.

ascending.

tree 5 m. tall.

shrub 7 m. tall

rays white, disk yellow.

seeds, flowers pinkish-white.

flowers blue.

heads pinkish-white.

flowers bright blue-violet
Quercus
- occasional in semi
- same in valley, then
- in marsh, Alaskan
- vib field.

Zizania
- dominant in standing water
- Phragmites
- common locally
- Phragmites
- abundant locally
- Polygonum perfoliatum
- common

Sept.
Oct. 13 - Letter Edge, south
- bank of Imjin River at
- Libby Bridge.
- on edge of cliff formed by
- an old basalt flow

Artemisia
- common
- Artemisia
- common
- Polygonum
- common
- Leptosperm
- rare
- Cassia
- common
- Leptosperm
- common

shrub 2 m. tall

eanes 3 m. tall; inf. purple

eanes in tall; inf. purple

much branched scrambling
- herb; flowers greenish
- white; fruiting calyx
- blue; flowering

plant green

erect, spikes nodding;
- flowers dull pink
- erect, flowers purple;
- white

leaves closing in darkness

stem ascending to erect
(to p. 92)
Sept. 13 — trip by truck from Tokhae to Lilly Bridge

Low hills with flat, rather narrow & wide alluvial valleys between them. The hills are covered by open to closed scrub and thickets. The openings are densely covered by a tangle of grass, shrubs and vines (Berberis, etc.)

The alluvial flats are covered by deep mats of Miscanthus and other grasses, various herbs, with invasion of Salix, alder, etc. Low wet spots are covered by Phragmites.

Lilly Bridge — south bank of Imphal R. is a low vertical cliff formed by a basalt flow which extends for a mile or so along river, apparently forming the wide plain on the side of river. Cut in places by ravine.

Quite a different set of grasses, at least, near edges of cliff.

Then via Pennine to Bridgeport
Around Red Cany
the hills are scul-
cered, but the scrub is
devastly sparse and the
ground is bare and
exiting.

Lower slopes, where they
were cultivated are mostly
covered by Miscanthus, with
some vegetation by Salix.
Alluvial flats, some
still in rice, with some
Phragmites. Some seem
to be still in weed, some
patching up to Miscanthus
+ Phragmites.

Returning along valley
running about due south
toward the hills have
essentially no forest left.
In the northern half of this
route they are blanketed by
a mixture of grass, vines
and low shrubs. Southward
they become barren and eroded,
with some open pine
woods, 1-4 x 5 m. tall. The
trees are all flat topped.
Usually little or no grass.
1966 Korea

4814 | Themeda
4 | commm
1 | fleure
1 | 43 Triglochin

Stems arching, ascending on erect stems. Tracts very small, white.
left. 14 - helicopter flight.

Helicopter took off at 9:30.

Along Han river - wide sand flats exposed, one reg.

Flood plain on L. in rice and

With crops.

Some small sparsely wooded hills, mostly with trees planted in rows, some grass.

Rice and other cult. on left bank, too, but hills densely wooded, more land in home, etc. Mrs. on left, except hill nearest river (Walker Hill) eroded to bedrock.

Hill near river covered by pine woods.

Plains of Han V. mostly in rice. Hills thinly wooded with thin scrub. Many grazing.

Left Han R. to follow on tributary to left. Valley floor in rice. Gardens on lowest hills. Upper slopes vary from closed forest to bare eroded ridges, a ridge with some woods. Mt. N. is forested to top, as are all higher ones on both sides.

Proceed.

Follow valley bet. rather high path. These become rather less wooded on goalng, to open scrub forest with some patches, grass, and some ground growth. Slight grassy ground.

Rising Han R.

Small valley bottoms in rice, higher ones, thickened by scrub forest, varying to shame and dense forest on higher slopes. Some clearings high up. Some of these in grass. A few in buckwheat.

Clearings become more abundant.

Large dam across Han.

Follow tributary to left. Hills partly denuded, in patches, esp. on left. Rice in valley bottoms.

Patches of good dense forest alternating with clearings on left. An st. mostly open to shade and scrub. A few patches of closed forest high up.

Then dense forest and mostly clear on left, varying to open. Then closed, scrub forest.

Then more scrubly on L.
and generally bare ground or ridges on left side, dense to sparse mixed forest in ravines. Better forest on right.

Rejoin Han R.
Kapu concept. - same

top from near river.
Hills, fields, woods, dense
thick forest, road in bottom.
A few clearings, then now, cultivation on very steep slopes, kind not determined except occasional buckwheat patches.
Climbing over high mountain divide Mt. with dense forest, many clearings. Some of them buckwheat. An Mt. on left almost all cleared.
Then a large river valley with wide flat bottom.
Much vegetation.
Churches along this valley, few hills dammed to make lake. Mt. on right to tops. Few small clearings.
High up, some cultivation slopes, some terracing.
Hills on left mostly sand covered, with open forest.
Mt. dense forest. Then dense forest on left on higher slope.

Considerable clearing on left. Lesson 3. Valley
narrow here. Worked into on both sides, with some clearings, apparently crossing from one meander to another.

If valley steep slopes, forested with considerable clearing, flat on terraced sides, valley bottoms in rice.
Quiet rugged country, some clearings in scrub.

Turned off to it up smaller valley. Rugged, densely wooded country with some clearing, or buckwheat patches, now in lower slope.
Climbing over divide. On other side same vegetation, but some clearing. Comes to a medium size, deep valley, very meandering, with steam dammed. Nearly cut across end of one leg.
Then on the south valley with stream running to left. Possible meander of same or Mt.
densely forested, locally cleared. Lower slopes around a big military establishment considerably eroded.

Following up this valley from hillsides with similar scattered trees, badly eroded. No installations. Higher up forested with little much clearing. Mostly almost denuded, but except lower slopes, still good. Small trees. Not on it. Forested there on left. Grass or thin grass. Min cleaning up, lower slopes to right. Higher are still forested. High point in distance to left. Worked but show little in scrub. Rice in valley bottom.

Crossed low divide to another meandering valley. Then a meander. Follow up this valley. Nearest mt. in grass. Harsh scrub, cult. further. Higher on right. Lowest slopes terraced in rice. Nest higher one in mine cult. Even stays

Mrs. Light one in same scrub and grass. Mt. generally more denuded, on left little forest in sight, that sheep on it. Higher slopes still forested, at least in fact. Circled around in wide glade and going down to small big bigh. Hands at 10:35. Soudan.

Foyangi R.

Jack to "Punchbowl" across divide. Pinus densiflora first below, along road a poor scrub. Bottom of Punchbowl in rice, millet, maize, bridle, chinese cabbage, tagetes. High lower slopes scrubby, all around higher forested. Roads on and near top ridges on DNZ side. Barrier cuts across north edge, down near base. Another road up to top of ridge on west side - study area in there? German Mts. Low hills in Punchbowl are grassy, semi-scrub.
Top of Mt Talmage 1304 m.

Very much disturbed, mixture of native and exotic herbs - Geranium, Cacalia, Plantago, Gentiana.

Aurinia saxatilis, Chrysanthemum, Festuca, Arctostaphylos, Artemisia, Eriogonum, Calamagrostis, Lycopodium, Drosophyllum, Carex, several Umbelliferae and Campanulas, Potentilla, Taraxacum, Phleum, Aegopodium, Thymus, Rubus sp., Carex, Esculentum, Viburnum.

Lynnaea punicea, Lychnis, Parnassia, Arnica, several other plants.

A view of forest front way down on east side.

Ragged front, large trees, mostly dead (Pseudotsuga, Picea), open patches, with low scrub. More or less characteristic of these slopes. Oaks, etc.

Robins abundant, established in valley floor and lower slopes.
Return flight - started just south of west over very wooded forested mts. Some cleared, much with terracing in valleys. A road winding through mts. much clearing alongfil.

Vallies leading into large reservoirs chiefly

Hills Mts. around reservoirs rather dry
Large rice area

Considerable erosion on sides of valley, some terracing, esp. on east side.

Crossed divide into another valley Mts. less cleared, but large slope cleared.
Then into a smaller valley. Mts. tributary of reit. Some terracing & clearing.

Heading s. w. directly across country, avoiding highest mts. Cleaning & grave almost to W.
Large river valley, apparently dammed with sand. Follow this.

Then cross to another very wide flat valley vast areas of cultivation big rivers, large city on east side of mts.
Churchill.

Hills here with open forest and scrub. Some erosion. Wide flat land, apparently dammed by recent floods.

Cut across hills going s. of w. route densely forested, some cleared. Very steep, cleaning area formed.

Many ranges, forested, some clearing.
Large rice on left - foot dammed, forming an elongate reservoir. R. H. along left banks as we go down it. River curves north, m.
curves at curve.
Another river joins. W. follow m. through small valley, then across hills, and along paved highway. Foothills on both sides of valley, some clearing.

Flying s. w.

Some erosion seen in mts. Much clearing.
Follow fairly large river. Not very large on first belonging. Must be Tibetan. Follow it N. rather scrubby but some fair closed forest.
Come out over end of tunnel into large valley, with rice cut. Paved highway, turning from w. to s. w.
Much flood damage apparent. Sandy flats in river bed. Touched garden land.
We landed 5:55.

Left 15. Flight from Kirnpa to Mya, north in DMZ and track along south "no-fly" in 1000 m. s. of DMZ.
Left Kirnpa at 10:05. ... A number of white houses in flooded fields near end of stuff.
Photo: Here of village in rice field n. of town.
Hills sparsely wooded, in reservoirs now densely so. Locally an intricate terracing which may be tea plantation.
Following Chagmyong chow.
Mt. on it very rocky, not well wooded. Streets in higheruvines.
Crossing to tyungwo, six-Bale, over wooded mt. with scattered acorn, grass and bare rock squiller along main ridge.
Tyungwo side much less wooded - sparse to open scrub.
Mt. across valley also with bars.
Tyungbu on left. Flying me. over moderate hills, mostly rather law.
Then more wooded but still ridge long. 
Photo: Mt. 1st village here.
Grassy low mts. north
rise between them. Then
very well wooded.

Then a small valley
running s. follow the
n.e. Many bare or
open-wooded hills. Wood
very scanty.
Then complex of wooded
mts. - Chungshan, some
clerest areas.

Then a larger n.e. valley.
Hilly rather denuded, green
with sparse scrub.
Follow - smaller n.e. valley
between partly wooded
hills. On a high ridge,
well wooded near top,
with some clearings. mostly
clerest. near base. A
ridge-up trail.

Well wooded peaks
(not at end of which I thought)
Chung chin valley abrupt.

Pubhshan gang well to right.
High valley wooded, mostly
clerest. on a slope.
Lower mts. Then Pubhshan
Chunchon to it.

Flying along Chungyang gang
Partly wooded, partly cleared
with be. A
Chungyang to it. Loaf in rise
then high Predominantly

Largely cleared. Then
wooded one on it.

If of Pub. chin valley, is
well forested, mostly cleared
but finish of pine.

Considerable cleaning in
high gentle slopes.
More and more pines now
Much cleaning, even
fairly high. A turn
near to left.

Instead of disused or
rs. wooded on ridge.
Then a high, forested
range. Spectacular cliffs

Grass on valley to it
victims bottoms of all
these valleys, cleaning
in lower slopes, few in
highs. Hard. Well wooded
mts. Mostly drained,
but clearings on ridge.
Big recovery in far
distance to it.

General pattern here
valleys a lower slope.
Cleaned ridges and high slopes wooded.

Forest of Chungyang gang.
Gentle.
Fairly well wooded mts.
True on left.

Largely cleared. Then
wooded one on it.
to left. Rocky ridge leading to both on left. Worked gentler further on, and much covered country.

South on rt. Has a small patch of lowery on top.

Connor above. Roch cliffs. Sea ahead

My clearing very high on knob, but lower, ridges almost completely denuded, lower hills bare and ending.

Spectacular rock ridge with pin barks. Reach's on top, with large hills bare. Rice land between.

Many villages along. Shore, also back from.

Denudation of low hill fairly general along coast. Less severe northwest.

Crystall lagoon. This may be severe denudation.

Running inland toward PM 7 at Chasam - chin valley.

Hills slowly become less bare. But still almost white spots.

Left Chasam - chin at confluence.

High wooded ridge. Must very low, dense, ...

smooth on ridge. Bigg in various elev on ridge.

Road and forest on top of this ridge.

Good broad-leaf forest there.

Road along valley back from PM 7. Con farm on mt. of it.

Mt. valley mostly clear but not farmland.

French bowl

Much burned area on east side.

Ridges s. w. very well forested except top.

Ridges & valleys to east very badly tamed by roads & other military activities.

These must be not well forested - locally open forest, locally burned out.

Burned pine-sized none.

(Jade - no.)

Communist road equally more scarred.

Daming has wide deep

area both sides.

Road burned area on south side of Bulaban.

Mt. with rather

scrubby forest, but few obvious clearings. Some old me.
High peaks all south. Observation posts on them. Much cleared area along roads.

Pop often fired. Burning has been common.

Large valley floor. Much rice on 2. not gardens even on m. side of range.

Much larger valley. Nan-kah-Ellin.

West and this rather demided. S cuts slopes, almost no forest even on higher parts. what there is quite open.

Then great flat valley. Rice incised in large flows. Rice land. Demided hills. No west goes, but little a no fine.


West across Ching-jun-chin.

Bare rocky inlet. only scattered trees in shall pools. Gentle slope green, locally open forest. Small rice.

Then Imjin R.

Following it, crossing great meanders. 

Ratty country with rice between hills. Some scrub but no forest on hills.

Not one grove.

Little cultivation on hills except lowest slopes.

Mud and more erosion, on ridge.


Turned south west before Freedom Bridge.

Imjin estuary.

Hills of this rather demided, sparse to open scrub. Higher ones with more continuous scrub.

Photo showing tendency to put villages on lowest slopes, not on mid land.

Phragmites on rice terraces islands in small estuary.

Went from Kin-Tong.

Fanned at Seoul (K-14) at 12:20.

Gosows Bifinnae abundant ornamental generally, planted here along roadsite in Korea.
1966

Lake

Left 17 - Left found for Thunder, miss Calhoun Pacific 4:15 P.M. 
Elected, left side.

First mountain range is
eroded & bedrock, little
vegetation.

South of this is extensive
country of small hills
and rice fields. Hills
are mostly somewhat
eroded, some seriously
so.

After 15 min. crossed a fairly
large very muddy river.
Same pattern of a network
of alluvial strips, with
hills and fields sticking
up between them, is very
extensive.

At about 15 min.
small range of small
hill, fairly extensive,
but not high. Rice is
valleys.

Mos rice with small sides
hills.

Considerable are of small
densely wooded & swampy
not forest slope. Landly
eroded locally.

20 min. Fair sized valley
system.
Left. 13 - Fukuoka
  Holidays continuing, introduced
  of the World War II, is very
  abundant in waste Places,
  grows to 7 m even 7 5 m tall.

Left. 23 - Trip to Train Fukuoka
  to 10:47 a.m.

Hills in city covered by low
  mixed broadleaf-thicket in
  cool forest. Then a Brandon
  in openings.

Rice land, of Michiyobi, being
  encroached upon by apt. building
  and other housing.

Maeshima area - coal mining
  underground causes settling
  of surface, gradually, which
  then becomes marshy.

Some black pine forest; formerly
  University forest deeped land,
  now belong to city. It is
  alony scenic, on sand
  flats. Much disturbed.

Lines close on low hills, but
  also badly cut up by
  excavation, etc. even though
  the area is a second-class national park.

Maizuru station (Maizuru)

Rice land, would Mt. inland.

Suizenji - terraced rice, 9 m.
  with thickets, great slightly
  inland. Area becomes wider.
  Several hills. Industry that

Kyushu

Lychee like old Upland citrus.

Hatao sta.

Maebam - hills approach
  RP on inland side. The coral
  with bamboo, etc on slopes.

Castor fish corporate dominant
  in the broadleaf over run land.

Kafuri area. The small
  area should called Kafuri-1yu.

Kafuri sta.

Small hills inland, close to
  with terraced rice and
  bottom land rice between.

Then hills in both sides.

Tanisan sta.

A large level rice area, with
  high rice (500 m) just back
  off it. Low lower slopes.
  Slopes matchy
  with clearing, thicker.

Apploe rice plantation, etc.

Fukae sta.

Mt. approach sea. Strip
  of pines wood along back
  of beach just before the
  Mt slopes reach the sea. Here
  there is rocky, few pines.

Small terraced. Rise of rice
  back of beach in small valley.

Daimyua sta.

Line on beach ridge. Rice
  behind. Continues same
  distance. Beach ridge
  for changes to dune area
  covered by shrubs.
In some places, brush cleared and terraced.

In the brush, there are behind peach trees and villages. Much disturbed, pine wood in dune.

Coastal strip, then narrower to almost nothing. Rocky shore, small headland, thicket, grass, bushes.

Southwestern small valley with rice, thicket, and bamboo on steep slope.

Rocky, steep coast, a few pines. This far some distance. Then a small meadow and a broad valley with rice.

Dr. Hamazaki 11/15

Toki Matsukura, research assistant, Ministry of Agriculture, to protect from strong winds, etc.

Collecting of plants and animals prohibited, also driving cars, filling camping, building fire, otherwise damaging forest is prohibited.

This is an extensive tract of Pinus thunbergii on rolling sand plains back of beaches. The distribution of large size
of Ischnopanax y. with some Wedelia st.
then a wide band of Cera
botanical, just back of
beach keeps.

In some distant area,
somewhat back of beach. abundant natural sitting
stands locally, mostly
very small, a few 2-3 m.
and fairly 1-15 m. very dense.
Locally much Batysmy
of a few Funiculiius y.

Banks of even small
trees covered by moss.
Older ones and moss as
Pterospermum thurburgii
sofa top of leaning trunks.
Lichens mostly vary
common on trunks of all age

Various other species — Lepedos
integrated, Phyllostegus, styph,"a

as, Macleaya, Myrica rubra, etc.
Caminus carpinga, etc. locally
common. Along roads and main
paths various other things
are established and invading
forest.

This forest is cross-cored
with roads and trails.

Toward the south end the
effects of wind are much more
apparent. Most of trees, esp. the
dwarfer ones, are strongly leaning

landward. The station is
much lower and stands
more open.
In general the ratio of
trunk diameters to height of
these pines is unusually
high, somewhat like what
is often seen on high ridges.
Forest extends in a
thin crescent-shaped strip
from Kamasaki to Higashi-Kareru,
between the railway and
the beach.

The soil is a fine gravel
sand, the combination
of needles, moss,upper layer
of sand very soft to walk on,
also tunneled with rook's
burrows. The moss is a
typical lichen species.

Left Higashi-Kareru at 2 p.m.
on train for Tsuchiura, as the weather
got more and more rainy.

Left 25 - Left Tsuchiura
5:30 p.m., in rain.
arr. Tokyo 7 p.m.
Sept. 22 - Fukuoka, Fukuoka Pref.
Phyllanthus
along path between buildings

Sept. 23 - Nijii-no Matsubara
Pinery of Namagaki,
in low forest of Pinus thunbergii

X. 45 Parmelia
common lichen of trees

X. 46 Polypodium thunbergianum
commonly epiphytic on trunks
of Pinus thunbergii

X. 47 Phyllanthus
very rare, one small patch
seen

Kyushu
Sept. 30 - Molokai

One day visit to lecture to Peace Corps volunteers being trained at several camps on the island. One camp is at Paluaro Fish Pond, another a mile or so east. Other groups are quartered at Hoolua.

Little change is evident on the part of Molokai between Hoolua and Mapulehu since the 1930's. Prosopyos, Eugenia carnabi, Paulacena, Achmea are generally common. Thepsisia, Chelidia, Pluchea indica, 13752 and Atriplex californica are locally common. The Pluchea indica reach 24 in tall.

A fire has burned over a large area of the forest steep slopes east of Kauna'oa.

Around Paluaro Fish Pond Pastelurus distichum is very common, forming a coarse, lumpy turf on sandy ground and in most depressions. Pineapple fields seem to have been extended somewhat.

Mauna Loa still has a few scattered trees, but from a distance not identifiable.

Oct. 1 - Flight to Hilo.

Very cloudy. Landa - top surface of west end seems somewhat more vegetated than before, but still there is considerable barren soil showing. The pineapple fields have been extended somewhat westward on the plateau toward Kaupulehu.

West Maui completely covered by clouds except a bit of coastline. Haleakula also is completely covered.

Magnificent view of Kohala gullies. Mauna Kea - newly vegetated and within a few hundred in of the summit. Upper limit is irregular, the newer cones not vegetated.

All along the Kamehameha Road the basaltic nerved out of cane mills is floating in great masses on the surface of the sea. Random great burns devoting from airport quite extensive - open.
Oct. 2 - Aridah. Rand pastures a mile or so below main ranch. Big scattered metrosiders with an open scrub of Douglas and gum with grass between. Scattered Grevia, confusa and Pinoeiers. The Pinociers about 3 m tall, upper branches leaf branched, with lanceolate leaves. Lower ones which are subject to browsing closely branched twigs, stiff, with short with twigs. Adjacent pasture separated by fence with fewer celata trees, only a sparse low quana scrub, dominantly grass.
Oct. 3 - Road to Ainahou Ranch, just off Chain-of-Craters Rd., Hawaii National Park.

Oct. 3 - Ainahou Ranch. In partially cleared Metrosideros forest.

49 Quercus suber
A number of trees planted in pasture.

50 Diospyros
Several trees planted in small orchard.

51 Ficus microcarpa
Obviously a volunteer tree in small orchard.

52 Diospyros
Several trees planted in small orchard.

53 Ficus microcarpa
Scattered in open guava-Dodonea scrub in pasture, all seem sterile.

54 Acacia confusa var.
Occasional in open guava-Dodonea scrub in pasture.

55 Dodonea viscosa var.
Abundant in scrubly pasture.

Low spreading bush, leaves light green, flowers white, fruit black, fleshy.

Small sterile trees
4-5 m tall, branches very thick and corby.

Small spreading tree
About 4 m tall, fruit still green.

Stiffly bushy tree 4-5 m tall, leaves on lower branches much shorter than on upper. Low spreading tree, 4 m tall, fruit turning yellow.

Large shrub, upper part sparsely hand, leaves lanceolate, brown, bronzed, part twiggy, stiffly much branched, leaves ovate.

Small tree about 4 m tall, flowers deep yellow.

Shrub 1.5 m tall.
Fruits reddish.
Oct. 2 - Kilauea, near Park Headquarters
Chrysanthemum maximum
locally naturalized in
grass, openings

1 57 Artemisia vulgaris
very locally naturalized
at roadside

2 58 Nephrolepis hirsutula
locally abundant on
road cut in lava rock

var. white, disk
dull yellow.
sterile, aromatic.
fonds erect
1966  Va. + Md. N.Y. D.C.

Oct. 22 - Several herbaceae
photos of fall colors
on n. side of Bull Run Mts.
near and at Roland estate.

Oct. 26 - Several herbaceae
of fall color at and
near Weems Creek in
Annapolis Freeway, Md.

Oct. 27 - Flew from S. to Glendale,
north of Taconic and
Berkshire to Albany, N.Y.
Full fall coloring in area
of N.Y. city and in some
distance north, but
almost gone in Albany
area. Around Williamstown
most of trees are bare.
Here are rounded hills,
wooded with mostly
deciduous forest, a few
scattered evergreens locally.

Nov. 5, 1966 - Georgetown D.C.

48159 (lab.)

common along edge of
sidewalk.

aromatic, somewhat
depressed, flowers lilac.
1946

Panama

Nov. 7 - left Washington at 10 a.m.
arr. Taunton airport 7:40 a.m.

Nov. 8 trip to Rome Colorado
arr. 9:50 RR 9:40 then left 9:40 a.m.

Arrived Frijoles 10:30
10 minutes by small boat to Farm Colorado

Walked up Wheeler Trail to Tower around 9 a.m. in the vicinity, back by Lake Trail and Wheeler Trail to laboratory.

Albert's field -
Panica maximus comm.
along 20. Further on
Periploca purpurea
Baccharis spontaneum
locally very abundant
around Fort Clayton.

Along Miaplan Lake Tortona grandis is
planted in a small area.

Pedro Miguel -
Hilly between P.M. and summit
are covered with very good secondary or altered primary forest. Rolling plateau. The
land near Sumapunt
is often grassy with
scattered bunch and
small palms. Baccharis
spontaneum

Carludovica palmata
and Heliconia sp. are very
common in undergrowth.
Most of forest is rather
poor second growth.
Gambira
1966 Panama
Nov. 8 - Barro Colorado Island
in moist forest
Quassia amara L.
common locally
Voyrie tenella W. J. Hooker det. P. J. M.
Dec. 1983
very local

Trema Psychotria racemosa (Aubl.) Racush.
occasional

Geophila repens L.
locally abundant in and around edges of opening
at Tower

17 m.
230 m.
250 m.
520 m.

Small understory tree in large shrub 4.5 m tall.
Flowers pendant, rosy pink.
Plant delicate, white, flowers lilac.

Prostrate, creeping,
forming extensive patches.
Fruit red, glossy, stone
with inner fleshy, curved.
Plush, resembling coarse horsehair.
Nov. 9 - Attleboro jungle
SITE TOUPE - 150' tall (46 m)
Canopy rather irregular
with deep holes and wind
damage. Considerable
diversity in species,
also in leaf size, crown
shape. Locally many
flat-topped trees. Mostly
rather umbrella-shaped.
At least 3 species of Cecropia.
Few microphyllous trees
but those quite large.
One orange-yellow flat tree
(Durio sp.?) At least
2 shrubs of purple flat leaves.
One or two bare of leaves.
A few bromeliads and
clumps of orchids in
upper branches of some
crown, but not many.
In interior of crown
some small epiphyte
mosses, etc. on upper
side of branches, but
no conspicuous growths
of epiphytes. Very little
conspicuous stratifi-
cation of epiphytes
and not very much
of leaf size.
Fruit said to be 60-70 year
old but thin in appearance.
Only an estimate.

Visited town with George W. Gauge.
Back of beach & small flat reef with typical strand community: 

Furcraea cymosa, dalmima,  
potataranticum, canavalia,  
thechet of conocarpus,  

Back of this a mangrove 
swamp: anegada,  
laguncularia, acrostichum.
Dec. 16 - Trip by small plane, Corlando, mingle mates, plane, Jacksonville to Apalachicola.

3:30 p.m. Take off from Jacksonville airport, Blackwater creek, north of St. Johns River. Mostly pine forest, often to newly dense, more open forest or area with understory, more clearcut not.

Some mixed deciduous and pine forest. Deciduous trees most abundant among water. Much clear cut land around new airport under construction.

Consistent mosaic of pine and deciduous forest with rather little mixing. Some of pine forest rather open. Deciduous perhaps more slightly lower ground and along watercourse.

Large cleared areas. Some of these apparently white sand. Some with "natural" outline, possibly with sand savanna. Some angular. Roads show white sand.

"Natural" savanna land becomes more predominant. Much of this obviously has been planted.

Creek meandering St. Mary's River - white sand bar and beaches. Forest moss and pine - higher, sandy ground. Not much clearing. Meandering streams of deciduous forest. Small round patches of deciduous forest in pine - swamps entered Chee Fenossi swamp.

Large hollow areas of sand - very open deciduous forest. Greenish understory. Then water with thousands of sun-reflecting areas of green and pine (?), of Hypo "aspidinum", mixtures of these small patches. Dense understory in open forest. Areas that are mostly water. Much large areas of open mixed forest with evergreen understory and of the undergrowth with scattered trees and with patches of small Tarradon. Then large scale mosaic of pine (longleaf) and predominately Tarradon with some pine. Areas of water and of Tarradon swamp with deciduous understory crossed road and Lawrence Rd.
here a narrow black water river.
Followed road through mosaics of pine and swamp. Many small palms. Large trees in deciduous swamp with much Tillandsia.

Some of the swamp has large trees. Some mostly growing as small trees.

Many round spots of deciduous forest in matrix of pine - Prob. slash pine.

Areas of replanted pine, notably half used.

Small forest fires.

Many circular deciduous spots, watercourses also with strips of deciduous good.

Otherwise solid pine good.
This is along Oconee-Flint boundary.

Small lake just south of boundary, with scattered Cypress in water.

Mosaics of deciduous spots and meandering strips in pines, much of pines has been cut and replanted, much of forest rather thin.

Lots of deciduous forest often don't change.

Some areas of mixed pine and deciduous forest.

From the lake we have been heading more or less southwest. In distance to right some open land - savannas or clearings.

Wetlands, of swamp in partial forest in close stands and deciduous.

Some patches of agricultural land, a few deep black ponds. A meandering river - black water with white sand beach on convex sides of meanders.

Large area of pinewoods, deciduous spots, and stream courses.

Then mixed farms and forest, much of this is obviously pine plantation.

Some deciduous, notably swampy forest, some more clear natural pines.

Area of lakes, probably near Lake Park, south of Valdosta.

Clyattville.

Mosaics of cleared land and swamps - pine plantations.

Large area of pines, savannah.

Swamp, mosaics, ponds.

Circular lake, many small swamps ahead, white left.
Coastal area very swampy, back of St. Marks light, salt marsh, estuaries, St. Marks, on eastern side large estuary, lined with wide salt marsh land has been dumped on edge of this from digging of estuary channel.

Marsh complex with intricate tidal channels and with beach ridges, most exposed shore, Apalachee Bay on left. Extensive marshes with spots of pine forest on it. Complex of tidal islands on west end of bay, mostly salt marsh, with meandering channel systems, Ochlockonee Bay, with extensive complex of hotly swamps and pine patches on north side, Saint Teresa Peninsula, also with spots on south. Alligator Point (Lighthouse Point) is a long spit pointing back as outermost of Peninsula. Lower Ochlockonee B. lined with broad tidal swamps. Coastal coast bordered toward No. de Chien. Coast lined with pine land. White
sand beach very narrow.
St. George Sound has tiny inlet at its mouth possible from dredging.
Shell Chute is a series of beach ridges. Mind disturbance white sand blowout - road the full length. Open near island end from now Narrows part than shortly sand with sand fences along outer side stumps in water. West end is salt-marsh and sand open sand.
St. George Island - sand with grass low dunes, mostly stabilized, small cacti, dunes said to be redheads, on sound side.
Nasland gets wider, inner part is low pine forest, outer part live dunes.
Then east through more grass. Goose Island - good island; live pines; good then stabilized live dunes. Monticello pine food on west.
Road and summer homes on outer side.
Bridge. Disturbance on
developed part to dune, one active site. Repeat this & west a stiff of stabilized dunes along outer edge, inner part pine forest, rather open to closed.
Dune like channel cut through. East. Then grass flat with ponds along Palachicola Bay side.
A few scrubby pine and semi-embossed stumps in grass.
Then pine forest on wide part.
Right house.
Pine forest with stiff of stabilized dune.
Narrow part grass.
Part burned. Start of pine
now end in oak.
St. Vincent I.
East side - tall mangrove with冈a inside.
Beach ridgy with cabbage palms mixed with a few live palms. Pine
Ridge, swamp complex.
Then freshwater lakes, willow, cypress and marshes. Palm & palm pine tract.
1966 Florida

Ocean side lined with tall open pine forest.
Westward less good.
Small clumps of longleaf pine forest on tops of bluffs now dominant.

Inland strips of pine forest, oak - palmetto scrub.

Whole island a series of curving parallel beach ridges with pine on ridge, scrub and marsh between, salt marsh near inner beach in mixed with live oak.

Strips of marsh on north side alternating with strips of rowers of pine half marsh with cypress along mid side of bay and both sides of head of bay. Large marsh with meandering creeks and large pond at head.

Long narrow lane between m.e. point.

Arrived at Apalachicola.

white marsh with s.m. clumps of pine and hardwood forest.

Dec. 17 St. Vincent Island.
road west of house

Large live oak forest with palmettos and big beeches.

Undergrowth of flex

Myrica

1 wild hog

1 turkey

1 blue jay

1 cow

1 great blue heron

1 grackle

1 mockingbird

1 red-tailed hawk

road turned north & crossed an extensive Toppel marsh. Strips of open water. Coasts.

Red-bellied woodpecker on palmetto trunk.
Paddled through back through from

Mostly Toppel marsh, but fringes of Cladium and Helicurus, patches of Salvinia and Alternanthera.

Clumps and margins of Salvinia.
1965 Florida

Dec. 17 - St. Vincent's Island
along Back Slough
p.e. corner of island, as
fresh-water marsh

Jug坛ania

in water with Typha
and Cladium

Chloris petala

rare, on wet ground
in clump of label.

near channel between
lakes
on low sandy ground

Andropogon glomeratus
occasional

Hypopitys capitata
small colony on
sandy roadside
in open thicket

Euphorbia graminifolia
abundant on sandy
roadside, in open live oak
thicket.

Rosmarinus

very common on sandy
dry soil, especially
in disturbed places and roadsides

Myrica

common in thicket, on
flat sandy ground.

petals white.

small tuft.

erect, to 1 m. tall,
  small tuft,
  erect, unbranched
  except at base,
  1 to 2 m. tall.

bushy, to 0.7 m tall,
  aromatic, flowers
  lavender, palate
  whiting with moron
  pronunciation.
  shrub 3 m. tall.
in Que encus virginian
flat on low sand

Euthamia
small colony on
planted area

Polypodium, polydodium
abundant on leaning
Que encus trunk

Pineum, lombro


similar
in fles mottos in opening

Dec. 17 - St. Vincent Island
back of St. Vincent Point

Juniperus
common on beach ridge
in palm forest, this tree at
edge of salt marsh

Dec. 17 - St. Vincent Island on
Magdalen Ridge, south of
Back Bay
in \( \text{Magdala} \)
frost on sand ridge

Osmanthus americanus?

Dec. 17 - St. Vincent Island
coast south of Oyster Pond
in clumps low short
back of low dune ridge

Cyperus

are
in Quercus virginiana
forest or low sand
flat.

48172
Euthamia
small erlong in
shaded area

17 73
Polyodium polypodioides
abundant on leaning
Quercus trunk.

15 74
Pterea Tobinia

49 75
Smilax

rare in climbing
in Plex vomitoria in opening

Dec. 17 - H. Vincent Island
back of H. Vincent Point

76
Juniperus
common on beach ridge
in palm forest, this tree at
edge of salt marsh

Dec. 17 - H. Vincent Island
Magnolia Ridge, south of
back of Baulk Bay.
in oak-magnolia forest on sand ridge.

77
Osmanthus americana

Dec. 17 - H. Vincent Island
coast north of Oyster Pond
in damp long short
back of low dune ridge

2 78
Cypress
rare

plants about 1 m tall

small twisted tree 4-5
m tall, fruit dull black
1964 Florida

48 179 Polygonum glaucum

x 4

80 Cyperus

nave

x 1

81 Bacopa monnieri

nave

on low sand dune back of beach

x 1

82 Thippia nodiflora

locally common

x 5

83 Coton

very common

x 5

84 Physalis

common locally

x 1

85 Canthus

occasional to common

x 8

86 Conium carolinianum

common

in open oak grove south of Oyster Pond

x 4

87 (lichen)

intricate of live oak

x 4

88 Parmelia

intricate of live oak

x 4

89 (lichen)

common locally

in sand

x 4

90 Cladonia

common locally

in sand

x 4

91 (lichen)

common locally

in sand

x 1

92 (lichen)

nave in sand

x 1

93 (lichen)

nave in sand

...
Dr. Fosberg
Dr. Fosberg,

I found a couple of lichens collected by you 17 Dec 1966 from Florida. They were in the undetermined material in the back log. I have made determinations and prepared the packets so they can be stored in the collections. For your records they are:

Fosberg Number 48189

Cladonia prostrata Evans

Fosberg Number 48191

Cladonia leporina Fr.

Sherry K. Pittman

24 Feb 1991
1964 Florida

Polygymnium y. punctatum
common

Cyperus
narrow

Bacopa mennei
narrow

on low sand dune back of beach

Stippia nodiflora
locally common

Centhrenis
very common

Physalis
common locally

Cenotheca
occasional to common

Cenchrus carolinianus
common

in coastal forest south of Oyster Bed

Robert Hindle 1964
Area south of Oyster Pond is a series of dunes. The oak forest, pines, and rather open sand ridge with Rosmarinus dominant except where there are bushes and trees. The sand is quite fine granite. A number of lichens are locally abundant on the ground, both in open and under oaks.

Along the beach east of the Oyster Pond inlet there is a sand flat 50 m. or so wide, irregular both in surface and in width. This gradually changes to very low dunes inland. The dunes have a sparse, locally open vegetation of Cuscuta, Physalis, Thesium, Spartina, Sporobolus virginicus, etc. Inland are depressions with young, with sedges, Polygonum, etc. in most soil.

On the inland side of Oyster Pond are parallel ridges, one of which is somewhat higher than the other and has a forest of Magnolia, Quercus nigra, Quercus pubescens, etc. Carya glabra occurs in

common blue and fountain lilies, stems 3.50 dm. climbing or. Tillandsia niresia is very abundant, growing in groups but not from

pines. Not seen on lime, at all. Magnolia lutea are enormous. Little under

growth, esp. under the trees, except locally

Pausania, and 

Scleria ornithina. 

Lobaria fumaria, almost 

blue stuff, especially 

along Back Bay, Blu, especially 

up to 27 m. or so.

Road along east end of top of beach, with marsh behind it. Lobaria common,

with Quercus virginian, occasional Carex sp. Going northward along this ridge as it gets wider, the forest becomes an almost pure forest of lobaria which continues, with some admixture of quercus, etc. to the same lime, until small junipers in undergrowth. Extensive

marsh of junicas to angle of St. Vincent Point.
Dec. 12. St. Vincent’s Island
Oyster Pond - a large open
water body, western end
surrounded by marsh.
Patches of Typha in east
end.
Many red-winged blackbirds,
grackles, fine crows here have
little Tillandsia.

In central part of island
west end of Tamiami Walk
open live oak forest,
with scattered yaupon,
Myrica, a broken but
prominent lower shrub
layer of Parmentiera, very few
latak, much Tillandsia
on quercus.

Photos 78, 98 z 2 hand.

Along the Walk is a semi-
open mixture of tall pines
(20 m), medium tallals (9 m)

& tallow tangled tall shrubs - 2 ex
aphiloria, quercus virginiana,
Myrica, etc. 9 1-2 m
layer of Sphagnum. The
tall shrubs layered tangled
with Vate it turdips and
limulis of pseudoschima.

Photos 2 83 2 8 z 3 10.
Further along the Walk
shifts, a large area of

Typha major to left -
possibly Typha bulgarica.
A zone of low ground, just a
few inches above lake level,
covered by an almost pure
stand of latak about 7-10 m
tall, with almost no
undergrowth, except a
few young latak, and
a thin herb layer of
Rhynchospora, cucullaria,
Panicum, etc. One great
pine on a very slightly higher
spit. Canopy of palms
almost closed. In a few
opening there are Myricas,
shrubs about 3-4 m tall.
On a bit there is a pond
marsh or night also, with
palm forest on low ground
between the 2 water bodies.

West end of Lake 5, along
causeway, solid Cladium marsh
a few clumps of slender shrubs.

North of Lake 5, end of
Lake 4 marsh has a large
stand of a coarse
Muhlenbergia with large leaves, slender
ingle. 8 3-4 m tall.

But this end of Lake 5 is open
pine forest with scattered
latak. Forest shrubs layer 1-2 m
Tall. Myrica, Rhynchospora, Cunuca.
with a continuous sea of Pauwets.

End of Peninsula next to big, high, flat with tiny point in center, to having an elevated angular face, giving a lightly appearance.

Chenier on sand ridge, ranging from closed with large trees to open with small trees and much Rosmarinus on sand. A few flex shad, the others vary enormously, a farm with broad about bright green leaves seems certainly to be a distinct species.

Between this and the Magnolia ridge there is a mixed 91 virginianum, G. novaehollandiae Pauwets, some Myricet, and large white oak have a heavy myrtaceous growth of Polypondium polypondide in lower 1/2. Large limbs on Villarens in smaller branches, long virginians, scattered long vines but very few.

Variation in Pine corn from scale face almost flat with tiny point in center to having an elevated angular face, giving a lightly appearance.

Chenier on sand ridge, ranging from closed with large trees to open with small trees and much Rosmarinus on sand. A few flex shad, the others vary enormously, a farm with broad about bright green leaves seems certainly to be a distinct species.

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1966 Florida

Dec 13 - north interior of St Vincent's Island

in open brushy sand
plain, with scattered tree
Pinus virginiana
trees about 10 m.

58194

42 95

Pinus virginiana
locally common, only
found here. on island,
said to grow in only the poorest
soils.

42 96

Quercus
locally common

Dec 13 - St. Vincent's Island,
Picinal, north coast near west end
in pine forest on low ground
near bay shore

41 97

Orthosiphon
common locally

40 98

Hypericum
common

41 99

begonia
common along roadside
in openings

472E0

Labiatae
locally abundant in low
open wetter spots

Dec 15 - south shore of
Big Bayou, St. Vincent's Island

43 01

Baccharis
common near shore

33 02

Baccharis
shrub 1-1.5 m. tall,
flowers orange red, calyx red,
small shrub.

stem herb, dead at this
season 1-3 m. tall, pods
pendulous.

44 20

growth 2-4 m. tall, dead, leafless

shrub 1 m. tall.
164

1906 Florida

Dec. 18 - center of St. Vincent island south of Big Bayou in semi-open sandy scrub-land.

48-03 Hypericum very common

20-04 Hypericum occasional

2-05 very common

Dec. 18 - St. Vincent Island just in front south, coast in edges of sandy pine-land

5-06 Leptophyllum very local

Dec. 18 - St. Vincent Island just south of Oyster pond along outlet channel in live oak, woodland

5-07 Polygemma occasional in sandy opening

2-08 Digitaria occasional in sandy opening

Dec. 18 - St. Vincent Island between just north of False No. 5 March

5-09 Myrica common in open brush-flict

2-10 (marig.) common in open sandy forest

Franklin Co.

shrubs 0.5 - 1 m. tall, bright green, dwarf shrubs, yellow

shrubs 0.5 - 1.5 m. tall, bright green, very used.

Dwarf shrub up to 0.5 m. tall, stems green above.

seed; flowers white

shrub 3 m. tall.

shrub 2 m. tall, flower pink.
abundant on Salix growing in shallow water, in marsh

Dec. 18 - Ft. Vincent Island, on 'Burnt-out Wells' bet. Lake No. 5 and Bock Bay, in pine and bald fescue

Elodea canadensis, very common in road clearing, bald fescue, common in more open places

12 12 Pycnochloa

13 13 Hydrocoela setosa

15 15 Quercus nigra, occasional

Dec. 18 - Ft. Vincent Island, with shore of Oyster Pond, variegated, very local on muddy shore

16 16 Hydrocoris, common

17 17 Hydrocoris, very rare

Dec. 19 - Ft. Vincent Island, s.e. corner, s of Bock, through in oak forest on stabilized dunes

18 18 Illecebrum
common in undergrowth

19 19 Quercus virginiana L.
common
Florida

168

Glerania + Planting.

On dry bars almost run.

Visibly some tall.

Some Quesus, Virginia.

Large areas of Chlamy in low places.

Labal forest toward

Ft. Vincent: plant bar

Considerable young

Juniperus Parryi, and

Ley pamphyla. Also

Small clumps Calluna;

Their forming a thinly

Gunder undergrowth, fulnis

From a small part of

The Canopy. One can

Walk freely in most

Places. Conspicuous

Signs of fire - blackened

Timber.

Forest generally about 10-15

In tall, closed.

Sites locally common,

Rubus sp. on ground, rare; also

Asplenium platynemn; all

Junipers seen young.

Appalachian estuary bordered by broad belt of tidal marshes, with winding channels. On east side the marshes have curious rounded lights, areas of bare extensive areas of forest with occasional clearings.

Next estuary to carth projecting delta deepest extending out on each side of channel.

Coast to east appears to be a drowned coast, with many complicated indentations. Offshore at least three broad banks, seawardmost roughly circular, with a rougher more diverse upper surface.

This whole coast has a broad strip of salt marsh with out trees and with intricate tidal channels and very elaborately lobed coastlines. Intends, e.g., as far as to see from this vantage point.

Inside this belt of marsh, left many less untouched for now.

distance inland: This is mostly green, becoming irregularly more divided into sections, in mosaic pattern. Some cleared land, but not much.

Penny to middle distance to right. Around it a higher proportion of land is cleared. Quite a few small black water ponds. Considerable many groves.

More oysters. Several very good. Island.

Seaward, deep somewhat meandering, very irregular course is Irregular.

East of it is mostly clear land, some apparently pasture, some cultivated. Somewhat plantation. Some of pasture clear, some with scattered trees. Lake very spotted, white with dark spots. Possibly salt deposits. For sale on right. Large irregular area in phosphate stock man.

Water very green.

Many points to right, mostly about circular.

Land about 1/2 cleared. Great
1906 Florida.

4:07
- Mostly evergreen.
- False city in sight, phosphate strip mine and plant on left.
- Country more wooded, some deciduous, some pine, some obvious pine plantation.
- Watercourses margined by hardwood.
- Large area of woods, mostly pine, some small birch and patches of deciduous.

4:11
- Large area of fine-textured vegetation apparently swamp, some open water, on right, water black.
- Then mosaic of pine and deciduous forest, some sink, a little clearing. Then mostly pine forest.
- Then many clearings.
- Meandering stream with white sand beaches on convex side of uplands.
- They mosaic of dense forest open forest cleared pasture. Forest mostly pine.
- Becomes more deciduous, in large patches.

4:27
- A strip of clearing.
- Railroad and main highway.
- Jacksonville ahead and to right.

4:33
- Reached airport.
Franklin Co. 175

Spreading tree 6-7 m tall, leaves green on both side, flat small spreading tree, leaves gray beneath, very common small spreading tree, leaves gray beneath, very common

shrub 7 m tall, leaves green on both side, flat

tips of branches red

Spreading tree 8 m tall, leaves falling, fruit from ground beneath
culms ascending from deeply buried rhizomes
Dec. 20 - visit to Brown property near Jacksonville, across from Jacksonville.
Previous owner built dam sometime after 1759, washed out before 1783.
Brown bought in 1784.

Damm between 2 points, to make garden in what is now marsh. Marsh died and dried out. Ditch made around perimeter of present marsh.

There was a previous dam, historically in English time, for water tower (notable to grind, etc). English had large ironstone mills. Formerly much more land than now. Old stumps, sand
decks, etc.

Mr. Jones, amateur archeologist, had dug around. Found axes, English money (1750?).
(Visited Jacksonville).
Marian William Jones, is a technician in St. Vincent's Hospital.

Dr. Wm. Sears, formerly of university, has done particularly well in anthropology. Now in another college south in Fla.

Dr. Val. Co.

Pond with water lilies.

Mrs. Helen Johnson went to N.C. about a 92 acre piece of land next to Mr. Brown in the north, belonging to Mr. Harry Queen.
Brown would like to have N.C. buy this. (Queen paid $2000 in 1900 for it).

Another piece that would fill out the place belongs to Mr. Phillips. This is cut off from the creek by the Queen piece.

Mr. Queen owns Spanish Point, 15 acres, which Mr. Brown sold him. Mr. Guthrie has a piece along the highway.

Linda Guthrie is a young friend of Mr. Brown, in her 10-20 years.

The Queen piece that is for sale is cut by Little Mill Pleasant Creek, which has marsh along it. Two pieces of high ground, a few acres each.

HURRICANE LEFT 1961 did a lot of damage.

Ximenia (prison plum or Spanish plum) grows to ground at 70.
The Queen property was
rather open mixed forest
large trees scattered, thick
tall shrub layer, etc., Reesa, etc., Virginia, Queen.
A small Indian mound
being excavated by people
from Children's Museum.
Large trees and F. virginiana,
beech, Carya G. phellophora,
Magnolias, F. negra.

Phillips' property has
head of Little Mt. Pleasant
Creek, with springs at
foot of steep bluff of sand.
River about 5-6 in deep,
clothed with tall shrubs.
Large trees were partially
knocked down by hurricanes,
leaving the forest in a
rather bedraggled condition. Magnolias
virginiana in spring
20 m tall, at least 25 cm dbh.
Many other large ones.
Magnolias grandiflora
has to, but smaller.

Both Brown & Phillips property
as part of an old Spanish grant
coupled to Antelope Gap.

Phillips place runs (200)
along highway and (100) toward
Mt Pleasant Creek.

Reports on excavations of
Indian mounds on Brown property
by Wm. H. Sears.
Excavation on Raccoon St, John
River, Florida,
Cent., Fla., State Museum
Two Woodland Island Period burial
mounds, Florida.

The Brown mound was
one of the few undisturbed
burial mounds and village
sites excavated in Florida.
The various other shell
mounds, located along
the shore, had been partly
sold as commercial shell.
The Brown mound was away
from the shore. Map of
Brown property (Sears 1957/p.1)
shows locations of mounds.

Jacksonville University, Jacksonville, Fla.
President - Robert H. Spino.

Mr Brown does not seem to know where the mounds.
The vegetation is principally a closed Quercus virginiana—
Quercus nigra forest about 15 m tall, with Carapa sp. scattered in it, often emergent, and Magnolia grandiflora locally common. Along highway there is a thin pine stand, locally as scrubby areas. Part of the forest is rather open, apparently the result of the 1964 hurricane. Many fallen trees and limbs.

Forest around the marsh area between Pinto Point and the house area is almost entirely bald, which is said to grow much faster down at low elevations where ground is more continuously wet.

The oaks are heavily draped with Tillandsia usneoides, and Polypondium polygodnoides is very common around bases of trees.
Vines
Emiliae pseudochinae
Emiliae of laurifolia
(Asclepiad)
Vitis sp. (Bohn 168)
Capeca amicata
Benedenia scandens
G. caulis?
Gelsemium scandens
Birkenia scandens
Vitis rotundifolia

Ferns
Asplenium platyneuron
Polyodium polypodioides
Woodsorrel reginae
Helypters of Hymenoptera
Ophioglossus uceolata
Theridium aquilinum

Other herbs
Bistorta lanceata
Iresine
Umbra
Ibidago strata
Nymphaea
Myriophyllum
Zygoa of angustifolia
Cladium
Monotropa universal
Tellandriaca minorida
Cypriens?
Arums?
Some live oak was cut during Civil War? In 1873?


In places the Paurata is almost continuous. In some areas, the canopy is broken by hurricane damage. Photos - to see, not.


One area of open forest in mostly Magnolia grandiflora to 15 m and 5 dm thick, some oak & Poreus. Few Liquidambar, a few Carya, a few hickory. This is said to have been closed forest before 1965 hurricanes. The Carya reach 15 m x even 30, sweet gum, etc. Magnolia about 20 m.

Rather open swamp - pond, small trees & large shrubs scattered through it, Hamma saplings, Acer, Magnolia virginiana, etc. This pond has an old ditch leading out of it. Said to have been dug by a man from Massachusetts, named Mitchell, who used to make a cranberry bog of this swamp. Large flock of beams - part Louisiana, a little blue. Some black crowned night heron. 7 ducks.

Mr. W. G. Johnson
Elgin 4/5/411

13
31 (vines)

Pepera

32

Small tree (often seen to 20 m. tall), some leaves tufted and sterile shrub. 1 m. tall.

"Herrenzacht"

shrub 2 or 3 m. tall; fruit black, pedicle reddish, slightly swollen.

Southern part is partially stabilized dunes.

Principal woody vegetation is Myrica and Baccharis halimifolia, forming a very open scrub.

In the north and there are hammock-like areas with live oak, bald, etc.