RECORD

F.R. Fosberg

Collection and Field Note Book

No. 65

(Aug. 1, 1962 - Oct. 10, 1962)

(42973 - 43244)

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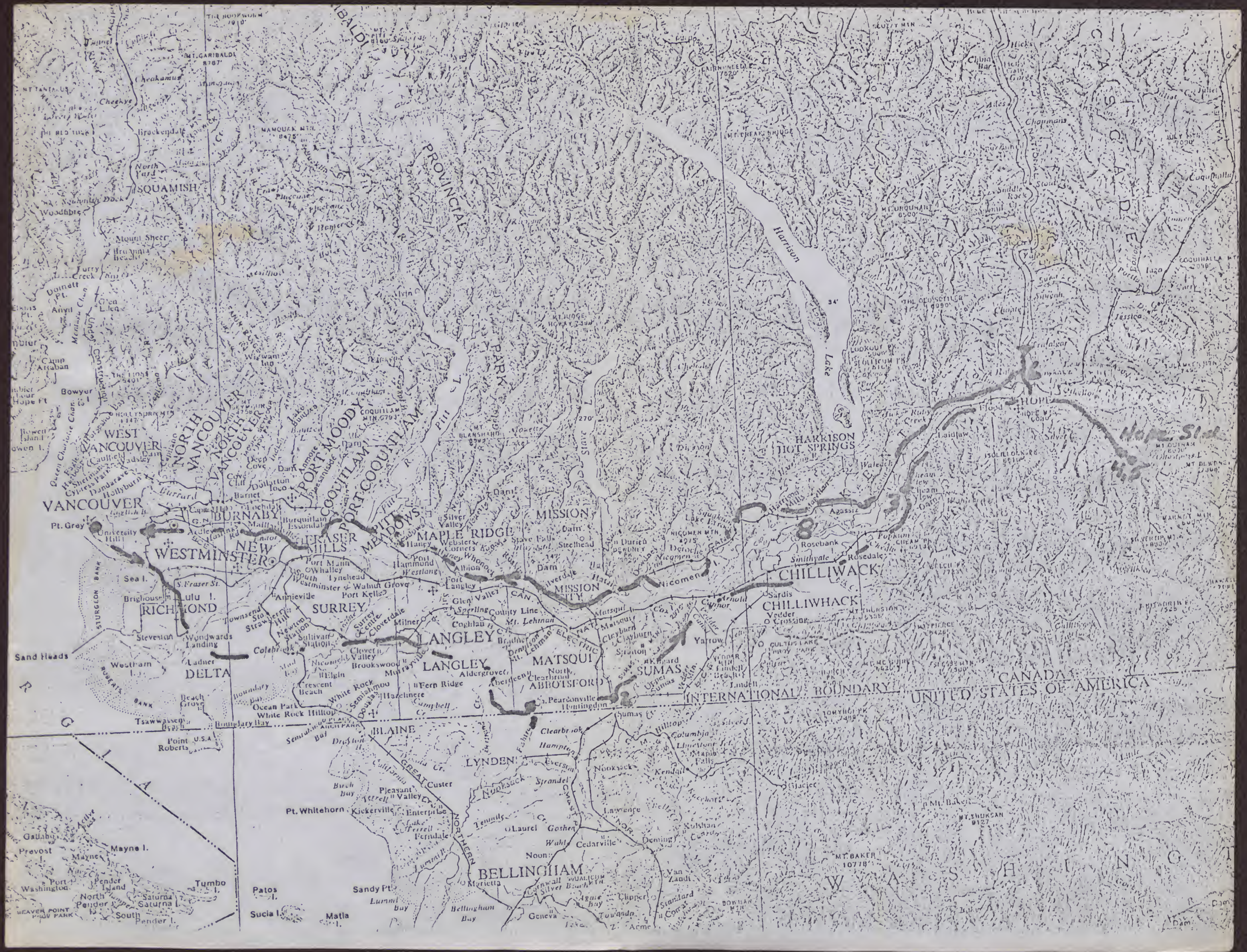
VANCOUVER
WEST VANCOUVER
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LANGLEY
MATSQUI
ABBOTSFORD
SUMAS
CHILLIWACK
HOPE
MISSION
MAPLE RIDGE
PORT MOODY
PORT COQUITLAM
PITT MEADOWS
FRASER MILLS
SQUAMISH
HARRISON HOT SPRINGS
BLAINE
LYNDEN
BELLINGHAM
Harrison Lake
Pitt L.
Pitt R.
Fraser R.
Sumas R.
Nooksack R.
Mt. Garibaldi 8787'
Mt. Judge Howay 5390'
Coquitlam Mtn. 6793'
Mt. Blanshard 8240'
Mt. Cheam 7920'
Mt. Urquhart 6160'
Mt. Baker 10778'
Mt. Shuksan 9127'
Tsawwassen
Point Roberts
Boundary Bay
Semiahmoo Bay
Birch Bay
Lummi Bay
Bellingham Bay
Sea I.
Lulu I.
Westham I.
Mayne I.
Saturna I.
North Pender I.
South Pender I.
Tumbo I.
Sucia I.
Patos I.
Matia I.
Sandy Pt.
Pt. Whitehorn
Pt. Grey
Sand Heads
Canada
United States of America
International Boundary

ITINERARY --- COAST FIELD TRIP

FRIDAY, AUGUST 24 (All Times Daylight Saving)

8:00 Assemble, 30th Street and Campus Way, O. S. U. campus. Buy lunches, if desired--$1.00. Riders will be assigned to cars having space.

8:30 Leave O. S. U. campus, proceed west on Highway 20, via Philomath, Blodgett, Burnt Woods, Eddyville, to Toledo. At Toledo, turn left (south) on old road to Newport.

10:15 Arrive at first stop, at salt marsh between Toledo and Newport. Park in single line along shoulder of road.

11:30 Leave salt marsh. Proceed through Newport to Yaquina Bay (Newport) State Park, just northwest of Yaquina Bay Bridge, for lunch.

1:00 Leave Newport, go south on Highway 101 to a point ca. 2 miles south of Yaquina Bay Bridge. There we will park in single line along shoulder of highway and walk west through some woods to an area of marsh and sandy beach.

2:30 Leave this locality, go south on Highway 101 ca. 13 miles to a spot ca. 1 mile north of Waldport. Park in a line along shoulder of highway, and walk west toward ocean to see coastal forest and dunes.

4:00 Leave here and proceed south, through Waldport, toward Yachats. Check in at motel (The Adobe or Deane's OceanSide, both a short distance north of Yachats) or find camping site at one of 3 suggested state parks near Yachats.

SATURDAY, AUGUST 25

8:00 Assemble at The Adobe; use same travel arrangements as on Friday, unless otherwise agreed upon.

8:15 Leave The Adobe, proceed south through Yachats to Cape Perpetua State Park. We will go first up the high road to the lookout point, then down and into main part of park. Drive to parking circle at end of the road.

10:15 Leave Cape Perpetua Park, drive south on Highway 101 ca. 19 miles to the Mercer Lake turnoff, 5 miles north of Florence. Turn left (east) and go for ca. 1/4 mile; park in single line on shoulder of road. We will walk down to a Darlingtonia bog, through a forest of pines, cedars, and hemlocks.

12:00 Leave the bog and drive south to Florence. Lunch can be purchased at various restaurants there. We will use Goddard's Restaurant, 2 miles south of Florence, as a rallying point.

1:00 Meet at Goddard's Restaurant to proceed south from Florence 8 miles to Carter Lake Forest Camp. This is an area of active dunes, encroaching on a coastal forest.

2:30 Leave Carter Lake and return north to Florence on Highway 101. The shortest return to Corvallis is east via Highway 36 (shown on your mimeographed map as U.S. 28). It is 90 miles from Florence to Corvallis, and a good two hours' drive. Highway 36 joins Highway 99W, north of Eugene, and you can follow the latter highway north to Corvallis; or, if you are alert, there is a connecting road north to Corvallis at Cheshire (on Highway 36, 4 miles before the junction with 99W); Cheshire is ca. 63 miles from Florence.

On Highway 36 there are some possible stopping points not on our formal itinerary. From 1 to 3 miles past Swisshome, 24 to 27 miles from Florence, there are some high, wet cliffs along the road that could be searched for ferns. Farther on, just west of Triangle Lake, ca. 40 miles from Florence, there is a large parking area that gives access to a douglas fir forest.

A car will lead the group back to the University, without making these stops; but if any cars wish to stop, they should have no difficulty finding their way "home" to Corvallis.

Notes:

1. Transportation. The total mileage is approximately 225 miles. Guest riders should make appropriate arrangements to share in travel expenses. A suggested way to handle this is to pay 1¢ per mile per passenger; but some other system might equally well be agreed on.
2. Oregon Highways. These are generally good. However, there are often dangerous curves; and logging trucks are an ever-present menace. I am especially concerned that everyone be most careful getting in and out of cars where we park. We are taking a chance parking on rather narrow shoulders, so one must be alert for oncoming vehicles. At any of the stops on Highway 101, please be sure your car is completely off the pavement when parked.
3. Botanizing. At each stop, we hope you will use the mimeographed list of species to help identify the plants you see. Two of the stops (Cape Perpetua and Carter Lake) are in State Parks, where collecting is not allowed. At other places, I think modest collecting will do no damage. We have been asked to preserve the Darlingtonia plants, however, and not to pick any at the place we stop. There is a spot nearby where someone has bulldozed part of the bog and where some plants of this species may be available (if they haven't already died). Oregon, too, suffers from the virus of creeping commercialization of her shoreline. O. S. U. staff members who will be on the trip are Dr. K. L. Chambers, Dr. William Chilcote, and Miss La Rea Dennis, all of whom will be glad to try to answer questions.
4. Motel. People who have sent money for reservations will be staying at The Adobe. Dr. Chambers will give you your room number and roommate's name. He will contact each of you at the motel Friday evening and, if necessary, either refund part of your payment or collect from you. We hope you will enjoy the ocean scenery from the motel, and will take the chance to botanize on the sea bluffs and examine the rocky tide pools, surge channels, algae, etc.
5. Camping. There are three state parks near Yachats having a total of 102 overnight camp sites. Beachside State Park, 5 miles north of Yachats, has 40; Cape Perpetua, 3 miles south of Yachats, has 48; and Neptune, a mile farther south, has 14. Food can be purchased in Waldport or Yachats.
6. Meals. Box lunches for Friday noon can be bought for $1.00 each, when we assemble at the O. S. U. campus. There will not be enough for everybody, however, as I expect some families will have their own food with them. There are also restaurants in Newport.

Dinner and breakfast can be obtained at The Adobe or Deane's OceanSide--as well as at other restaurants. Lunch on Saturday should be gotten at restaurants in Florence; we will rally at Goddard's Restaurant, but they can serve only about 30 at a time. Saturday evening after we get back to Corvallis, the O. S. U. Commons Cafeteria will be open to serve us from 5:00 p.m. to 6:00 p.m., or a bit later.

Kenton L. Chambers

LIST OF PLANT SPECIES

TOLEDO SALT MARSH (and vicinity)

Polystichum munitum -- Western Sword-fern
Pteridium aquilinum -- Western Braken-fern
Zostera marina -- Eel-grass
Triglochin maritima -- Seaside Arrow-grass
Distichlis spicata -- Saltgrass
Agrostis palustris -- Creeping Bent-grass
Hordeum brachyantherum -- Meadow Barley
Anthoxanthum odoratum -- Sweet Vernal-grass
Deschampsia caespitosa -- Tufted Hair-grass
Carex aperta & C. hindsii -- Sedge
Scirpus robustus -- Marsh Bulrush
Scirpus americanus -- Three-square
Scirpus microcarpus -- Bulrush
Juncus effusus -- Common Rush
Atriplex hastata -- Halberd-leaved Orache
Salicornia ambigua -- Woody Glasswort
Potentilla pacifica -- Silver-weed
Rubus parviflorus -- Thimble Berry
Oenanthe sarmentosa -- Water Parsley
Heracleum lanatum -- Cow Parsnip
Vaccinium ovatum -- Evergreen Huckleberry
Cuscuta salina var. major -- Salt-marsh Dodder
Grindelia stricta -- Oregon Gum-plant
Alnus oregona -- Red Alder
Rubus laciniatus -- Evergreen Blackberry
Achillea millefolium var. californica -- Yarrow
Cotula coronopifolia -- Brass Buttons
Erechtites prenantheoides -- Australian Fireweed
Epilobium angustifolium -- Fire-weed

Atriplex patula -- Spreading Orache
Conioselinum chinense -- Hemlock-Parsley
Orthocarpus castillejoides -- Owls-clover

NEWPORT MARSH AND SANDY BEACH (and vicinity)

Struthiopteris spicant -- Deer-fern
Pteridium aquilinum
Pinus contorta -- Beach pine
Picea sitchensis -- Sitka spruce
Poa macrantha -- Seashore Blue-grass
Elymus mollis -- Sea Lyme-grass
Calamagrostis nutkaensis -- Pacific Reed-grass
Agrostis palustris -- Creeping Bent-grass
Ammophila arenaria -- Beach-grass
Anthoxanthum odoratum -- Sweet Vernal-grass
Juncus balticus -- Rush
Juncus lesueurii -- Salt Rush
Carex obnupta -- Slough Sedge
Maianthemum bifolium
Cardionema ramosissima -- Sand Mat
Cerastium arvense -- Field Chickweed
Myrica californica -- Western Wax Myrtle
Polygonum paronychia -- Beach Knotweed
Fragaria chiloensis -- Coast Strawberry
Lathyrus japonicus -- Beach Pea

NEWPORT MARSH -- continued

Potentilla pacifica -- Silver-weed
Comarum palustre -- Marsh Cinquefoil
Salix hookeriana -- Willow
Sisyrinchium californicum
Abronia latifolia -- Sand-verbena
Lupinus littoralis -- Seashore Lupine
Lathyrus littoralis -- Beach pea
Cakile edentula -- Sea Rocket
Armeria maritima -- Sea Thrift
Hypericum anagalloides
Spiraea douglasii -- Western Spiraea
Gentiana sceptrum -- Staff Gentian
Convolvulus soldanella -- Morning-glory
Centaurium umbellatum -- Centaury
Plantago lanceolata -- Plantain
Lonicera involucrata -- Twin-berry
Rhododendron macrophyllum
Gaultheria shallon -- Salal
Arctostaphylos uva-ursi -- Kinnikinnick
Franseria chamissonis -- Sand-bur
Hypochoeris radicata -- Cat's-ear
Achillea millefolium -- Yarrow
Aster subspicatus -- Aster
Solidago spathulata -- Sticky Goldenrod
Vaccinium ovatum -- Evergreen Huckleberry
Galium trifidum -- Small Bedstraw
Vaccinium uliginosum -- Blueberry
Sieglingia decumbens
Agrostis pallens -- Seashore Bent-grass

WALDPORT DUNES

Most of the above, as well as:

Botrychium silaifolium -- Leathery Grape-fern
Carex macrocephala - Large-headed Sedge
Spiranthes romanzoffiana - Ladies Tresses
Habenaria greenei - Rein Orchid
Rumex maritimus -- Seaside Dock
Ranunculus flammula -- Creeping Buttercup
Sanicula arctopoides -- Snake-root
Glehnia leiocarpa -- Beach Silver-top
Angelica hendersonii -- Angelica
Baccharia pilularis -- Chaparral Broom

CAPE PERPETUA

Polystichum munitum -- Western Sword-fern
Athyrium filix-femina -- Lady-fern
Struthiopteris spicant -- Deer-fern
Polypodium scouleri -- Leather-leaf
Polypodium vulgare -- Licorice-fern
Selaginella oregana -- Selaginella
Equisetum telmateia -- Giant horsetail
Picea sitchensis -- Sitka Spruce
Tsuga heterophylla -- Western Hemlock

CAPE PERPETUA -- continued

Maianthemum bifolium -- False Lily-of-the-Valley
Oxalis oregana -- Oregon Oxalis
Lysichitum americanum -- Skunk Cabbage
Ribes bracteosum -- Stink Currant
Rubus spectabilis -- Salmon Berry
Rubus parviflorus -- Thimble Berry
Alnus oregona -- Red Alder
Montia siberica -- Candy Flower
Menziesia ferruginea -- Rustyleaf
Vaccinium parvifolium -- Red Huckleberry
Vaccinium ovatum -- Evergreen Huckleberry
Gaultheria shallon -- Salal
Stachys sp. -- Hedge Nettle
Sambucus glauca -- Blue Elderberry
Sambucus callicarpa -- Red Elderberry
Petasites speciosa -- Western Coltsfoot
Bellis perennis -- Daisy
Scrophularia oregana -- Figwort

DARLINGTONIA BOG AND FOREST

Struthiopteris spicant
Pteridium aquilinum
Pinus contorta -- Coast pine
Thuja plicata -- Western Red Cedar
Tsuga heterophylla -- Western Hemlock
Pseudotsuga menziesii -- Douglas Fir
Myrica californica -- Western Wax Myrtle
Lysichitum americanum -- Skunk-Cabbage
Darlingtonia californica -- California Pitcher-plant
Drosera rotundifolia -- Sundew
Ledum columbianum -- Labrador Tea
Pterospora andromedea -- Pine Drops
Rhododendron macrophyllum -- Rhododendron
Gaultheria shallon -- Salal
Vaccinium ovatum -- Evergreen Huckleberry
Arctostaphylos columbiana -- Hairy Manzanita

F. R. Forberg
Field notebook No. 65
begin with no. 42973
end with 43244

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Aug. 1 - Everglades Nat. Park

Pinelands south of

a sparse stand of
Pinus elliottii v. densa
(logged off in middle 40's)
on pitted limestone,
burned about 3 years ago.
Pines up to 20 m. tall and
10-15 cm. dbh. bases
swollen. The pines are
actually growing in the
pits in the limestone.
Ground water showing
in pits, 5-6 dm down.

For some distance inland
from Flamingo most of
the mangrove have been
killed almost completely
by Hurricane Donna, Sept. 1960.
Rhizophora, Laguncularia,
Avicennia are over large
areas almost completely
dead, though still standing.
Some living Conocarpus,
battered ~~but~~ and completely
defoliated in the storm,
now putting out abundant
leafy branches - these on
slightly higher ground, where
Conocarpus naturally grows. In
swamps now a blanket of Batis
and a few scattered mangrove seedlings.

Cape Sable Prairie
west of Flamingo, — a
flat saline mosaic
of Borrichia, Spartina,
Batis, Sporobolus virginicus
open mud flats with
salt, — on a dense very
fine stiff clay-like marl.
Patches of forest - badly
hit by hurricane -
Conditions change drastically
from inundation by fresh
water, long dry periods,
high salt content after
hurricanes - when
I examined the surface
was dusty (dust dune
said to form to 0.7 m.? high)
but in lowest spots
the marl is moist 3-4 cm.
down. dark gray, salty
to taste.

Paspalum distichum
where old cotton eradication
camp stood. other areas, too.

A very slight beach ridge
of similar marl, perhaps
only a few cm. difference,
has a row of concarpus.

Surface of ground,
where bare, dries into a
polygonal pattern, but the
polygons, rather than
indicating simple shrinkage, seem
to indicate later expansion, as the cracks bulge

Inland the hurricane
damage is very marked
not tapering off gradually.
Then a large area of
rather less damage.

A broad zone around
the main mangrove
swamp has low bushes
of Rhizophora, in places
forming a mosaic with
areas of saw grass. Mostly
1-2 m. tall, some patches
more. Becomes very sparse
inland, scattered very
small ones in the cladium,
well inland these are
mainly seedlings.

Saw grass near edge
of pinelands ~~has a~~ is on
a marl surface just
at water table. Scattered
cobbles of limestone.

In saw grass are scattered
clumps of shrubs and trees -
mostly bumps in the
limestone surface. Some
are peat elevations. Clumps
of Taxodium are basins.

Large areas of sparse stands
of dwarfed Taxodium (pond cypress tree).
up to 3-4 m. tall, 4-7 cm. dbh.

scattered in saw grass. Trees are very old, at least have very thin rings, acc. Robertson.

The pattern of zonation of the mangrove species, acc. Robertson, is very confused and not at all clear in the park area.

The deaths of the Rhizophora, Laguncularia, and Avicennia over large areas resulting from the hurricane, is very remarkable, as in many places the trees seem not to be ~~at~~ obviously injured (just as in Guam).

42973

aug 2.
Homestead Air Force Base
42973 Hedyotis nigricans var.
common on compacted ground
along strip.

flowers white or almost so

1962 Florida

Aug. 2 - flight from Homestead A.F.B. to Dry Tortugas.

8:28 Left field.

Pine lands around Homestead are very rapidly being cleared for tomato culture. Only a relatively few blocks left.

In edges of everglade area are evidences of attempts at agriculture - parallel patterns, blocks, etc.

In Park a fairly large area of pine with a few scattered hammocks of denser vegetation. The pine is mostly open to semi-open. (photos)

Two long strings of woody vegetation in the everglade saw grass area somewhat broken (photo) - the alignment looks almost as though it were not a natural feature. Between patches of it nothing seems visible except the saw grass.

Beyond Mahogany Hammock there is more water than land - the small mangrove belt is very obvious, but with islands of apparently hammock vegetation. They a maze of mangrove and tidal channels and ponds (photos).

Then a strip of mostly open water.

The part toward the Flamingo road is solid mangrove with myriads of tiny ponds. The coastal portion perhaps 1/5 the width of the mangrove swamp, is light gray - mangroves killed by Hurricane Donna.

The water in the larger water bodies in the swamp is a blackish dull brown. In some of the smaller ponds it is chocolate brown.

The Batis in the destroyed mangrove is rather local.

Apparently much Batis and other low vegetation, perhaps floating, in the neighborhood of the old canals. The whole inner Cape Sable area looks generally unhealthy. Much marl in tidal channels in area Cape Sable - they look milky or Cape as last color.

Very long sand beach lines Cape Sable island on the outer side.

The ocean is a dull pea green off the Cape. Some distance out it becomes mottled as though there were some reef growth. Not clear-

1962 Florida

The water is not very clear. Gradually becomes too deep to discern a pattern.

Keys to left - form a very complicated system, but general pattern seems to be more continuous land on outer side, a broken barrier or inner lagoon + cross reefs & channels between, but very irregular.

Sea green color still evident, no bottom pattern visible.

Course more or less parallel to line of Keys but much to right.

Apparently a strip of deeper water along the inner side of the chain of Keys, judging by color of water which there is blue rather than green - but seen only from a distance.

Water very gradually deepens along course, too. An abrupt boundary between the milky pea green color and a darker, 9:43 but still dull, blue. Perhaps has nothing to do with depth.

Heading directly toward Marquesas ~~Key~~ Atoll -

Water abruptly shallower shortly before we reach M.A. This shallow water forms a wide strip, rather

discontinuous, with irregularly shallower and deeper water areas.

On this shallow strip are what appear to be submerged dunes. (Photos - hor.)

Reefs very complex between there and Marquesas Keys.

On western side and open shoal with very shoal veg.

Marquesas Keys mostly ~~covered~~ covered by mangrove with broad outer beach ridges with scrub fringe. Lagoon very shallow with conspicuous winding channels like tidal channels (photos)

West of Marquesas a wide mass of reefs with submerged dunes (photo). This extends far to west. These dunes undulate and anastomose but trend is E.-W. And there are very obvious N-S. channels and current patterns. Must be due to alternating N.-S. tidal currents. ?

This is a very wide feature - several miles, and extends many miles to west. Should be studied in

relation to origin of sand keys.
Westward as areas of small "dunes" many of them almost like barchans. convex northward. This locally superimposed on much larger undulating network pattern.
The whole pattern fades out and disappears in deeper water westward, with a prolongation to southwest.
Water is much deeper to west, but still not a clear blue.
Sargassum (?) floating east of Tortugas. Some of it seems to form a line along an abrupt deepening, a at least change in color of water running n-s. just as East Key Tortugas comes in view. East Key grassy with some bushes.
Middle a crescent shaped bar - no veg.
~~Hospital~~ Key
~~Hospital~~ Bar with a patch of bushes an a patch of grass (?)
Shores of Garden, Bush, Ring Keys, Loggerhead in distance.
Loggerhead as a considerable growth of Casuarina from end to end, rather thick on

north end. Many coconuts in center and a row toward north end.
Apparently boulder ridges on east side of Long Key.

1962 Florida

Geog. 2 - Tortugas
Long Key complex

Considerable low scrub of Avicennia and much Laguncularia on one side, pebble ridges with little vegetation on outer sides. One or two Suriana bushes, small. Are small Casuarina 0.4 m. tall. Mats of Sesuvium mostly on low spots. Occasional atriplex. & Patches of Euphorbia mesembrianthemifolia on slightly elevated pebble bays. The Laguncularia is all on areas occasionally flooded, pebble bottom or sand and pebbles.

Small numbers of Rhizophora up to 1 m. tall in water on inner edge of more distal part (Photo)

swarming with coenobita

Sesuvium, and

and Euphorbia mesem.

around the pond the peat is much deeper.

Bush Key - Inner depression a dense thicket of Laguncularia (Photos, end of 62-3, inside). No other plants in this area except ~~a few~~ a few Rhizophora. Ground bare. Around this are broad flats and beach ridges. The flats covered by Suriana scrub, and Opuntia in openings, locally Sporobolus virginicus and ~~Uniola~~ ~~paniculata~~ Beach ridge with Sesuvium mat, flowing down onto beach. Some relatively bare places in Sesuvium and Sporobolus, kept so by footing terns; scattered Portulaca. Some patches on flats have Uniola.

In the Laguncularia forest is a thin layer of peat under the litter, then loose coarse sand mixed with humus. In the widest part of this forest is a fair sized pond at the west end of the thicket and a few bushes of Conocarpus and one of

a sterile Solanum. This is surrounded by Suriana scrub 2 m tall.

Separated from the main mangrove thicket is another small pond completely covered by Rhizophora, dense about 4-5 m. tall.

Garden Key

Outside the walls and moat of the old fort there are two lobes of sand that have been built up since the construction of the fort. There have a few Casuarina and Cocos trees. Otherwise they are partly covered by weeds and Cynodon, partly by native strand vegetation - Atriplex, Uniola, Sedevola, Sesuvium, Sporobolus virginicus. Euphorbia ~~buxi~~ mesembrianthemifolia, Ipomoea tuba and I. pes-capræ, and Opuntia dillenii. Patch of Agave sisalana. Several young Phoenix dactylifera.

Inside the fort, the parade ground is a mowed grass lawn of Cynodon, Stenotaphrum, Eragrostis with scattered planted

Pectis linifolia
Citrus aurantifolia
Bougainvillea glabra?
Peperomia quadrifolia
Peperomia sp.
Waltheria indica
Sida sp.
Corchorus aestuans
Euphorbia cyathophora
Portulaca oleracea
Abrus precatorius

Trees of Bursera simaruba, Bleekeria elliptica, Phoenix dactylifera, Tamarindus indicus, Pandanus tectorius, Thespesia populnea, Conocarpus, Cordia sebastena, Cocos, Terminalia catappa, Coccoloba uvifera, Delonix, Lithocarpus ~~nerium~~ indicum

A number of ornamentals are planted here - Malvaviscus arboreus, Catharanthus roseus, Rhoeo spathacea, aloe vera, Caesalpinia pulcherrima, Pedilanthus tithymaloides, Codiaeum variegatum, Hymenocallis littoralis, Setaresia purpurea

Several weeds are abundant here - Euphorbia blodgettii, Phyllanthus amarus, Euphorbia hirta, Sida acuta, Eragrostis ciliaris, Conyza canadensis, Bidens leucantha, ~~Melampodium~~ Melanthera nivea, Cenchrus pauciflora, Brachiaria, Digitaria nodiflora, Capraria, Lepidium, Gaillardia,

Weeds seen outside only -
Euphorbia prostrata
~~Portulaca~~ ~~Sida~~ ~~Cenchrus~~

On the beach, cast up, are
Thalassia testudinarum
Diplanthera wrightii
Syringodium filiforme

Aug. 2 - Bush Key
low sand islet

4	74	Solanum rare, in edge of mangrove thicket	less than 1 m.	sparsely leafy, green stemmed shrub 1 m. tall, diffusely branched; stalk.
3	75	Philoxerus vermicularis (L.) R. Br. very local in open Suriana scrub	Br.	creeping, forming loose mat.
4	76	Euphorbia mesembrianthemifolia Jacq. common locally on low coarse sand ridge		dwarf shrub to 4-5 dm. tall, somewhat glaucous.
3	77	Rhizophora mangle L. a few trees in wet thicket of Laguncularia		small tree 4 m. tall, with arching prop roots.
3	78	Scaevola plumieri (L.) L. small patch on sand flat		shrub up to 0.3 m. tall, leaves fleshy; flowers white.

Aug. 2 Garden Key
on flat coral sandy ground

1	79	(gent). Eustoma exaltata (L.) G. Don rare in old fort		erect, glaucous; flowers purple.
6	80	Euphorbia blodgettii Engelm. ex common in ruin of old fort	Hitchc.	stems ascending, arching at tips.
2	81	Digitaria horizontalis Willd. occasional on wall of old fort		culms decumbent, spreading from central crown.
2	82	Cyperus planifolius L.C. Rich. occasional on back of shore		caespitose
3	83	Cenchrus common in cracks in old concrete pavement		spreading tufts.
3	84	Conyza canadensis (L.) Cronq. common in cracks in old concrete pavement		erect
2	85	Digitaria occasional. weedy places		stems decumbent.

42986		Melanthera nivea (L.) Small common in weedy places		much branched herb, flowers white, heads hemispherical.
3				rays white.
2	87	Bidens ~~leucantha~~ alba occasional in weedy places		erect, glaucous
1	88	Sonchus oleraceus L. rare in weedy places		erect, base of bracteal leaves scarlet.
3	89	Euphorbia heterophylla common in weedy places		culms spreading
3	90	Cenchrus common in weedy places		prostrate, purple.
1	91	Euphorbia prostrata? in cracks in old concrete pavement		
3	92	Conocarpus erectus f. rare (with common green form)		shrub 2 m. tall, leaves silvery.
4	93	Conocarpus erectus L. common		shrub 3 m. tall, leaves green.
2	94	Euphorbia glomerifera? occasional in weedy places		flower white.
1	95	Euphorbia blodgettii Engelm. rare in weedy places	ex Hitchc.	stems ascending.
2	96	Cynodon dactylon (L.) Pers. common		forming a mat.
3	97	Stachytarpheta jamaicensis common in weedy places	(L.) Vahl	depressed much branched plant, flower light purple.
		Aug. 2 – Bush Key on low sandy flat		
3	98	Avicennia germinans (L.) L. local in low wet place		shrub 2.5 m. tall leaves white beneath,
3	99	Cyperus planifolius ~~R.Br.~~ L.C. Rich. rare		flowers white. caespitose.

43000 4 Sporobolus virginicus L.
abundant locally

forming a loose sod, panicles erect.

Aug. 2 - Long Key complex

43001 > Laguncularia racemosa Gaertn.
occasional in mangrove swamp, on coral gravel

shrub 3 m. tall.

2 02 Rhizophora mangle L.
rare in mangrove swamp on coral gravel

shrub 3½ m. tall, with prop roots; sterile.

1 03 Ipomoea pes-caprae (L.) Roth
one seen on coral gravel above beach.

seedling

4 04 Atriplex pentandra (Jacq.) Standl.
common on gravel beach

much branched bushy herb.

ridge

2 05 Casuarina
one small plant on outer beach ridge

seedling 0.5 m. tall; sterile.

2 06 Suriana maritima L.
several plants on gravel beach ridges

small bush 0.5 m. tall.

5 07 Salicornia
common in low places, flooded at high tide

erect, stems and spikes terete, fleshy.

Aug. 3 - Garden Key
on flat coral sand

1 08 Portulaca oleracea L.
common

stems red
prostrate, fleshy; flowers yellow, 11-12 mm. across, petals emarginate
stamens 20-22.

2 09 Portulaca ~~tub~~ oleracea L.
common

stems ascending, fleshy, pen, flowers yellow 12-14 mm. across, petals emarginate, stamens 19-24.

1962 Florida

4	30½0	Lippia nodiflora L. occasional		prostrate, somewhat fleshy.
3	11	Desmanthus occasional		prostrate
3	12	Sida procumbens common		prostrate
1	13	Lycopodium ~~ring~~ filiforme Küz. thrown up on beach		leaves terete.
1	14	Phyllanthus amarus Schum. & Th. occasional inside old fort		erect
1	15	Euphorbia hirta L. common inside old fort		
1	16	Sida acuta Burm. f. occasional inside old fort		
2	17	Eragrostis ciliaris (L.) R. Br. occasional inside old fort		erect.
1	18	Diplanthera wrightii (Asch.) Asch. thrown up on beach		leaves flat.
3	19	Eragrostis domingensis (Pers.) common inside old fort	Steud.	small tufts
2	20	Lippia nodiflora L. occasional inside old fort		prostrate, flowers white.
3	21	Brachiaria abundant locally		prostrate to ascending, from stolons.
1	22	Gaillardia rare in old fort		rays yellow, reddish near disk
1	23	Capraria biflora rare in old fort		
1	24	Heliotropium parviflorum rare in old fort		flowers white
1	25	Lepidium rare in old fort		completely dead.

Dry Tortugas, atoll

Aug. 3 - Garden Key
Land on top of old walls has a number of weeds, also

north lobe of sand -
a Largely a Uniola flat
l with patches of Sesuvium,
ll Iva, Opuntia, one
r small Thespesia, one
small ~~Mangrove~~ Rhizophora
and a small seedling
in moat,
c Cyperus
la Sporobolus
c Ipomoea tuba
c Melanthera
lc Lesbania
(dead large plants
[illegible] small ones)
c Cynodon dactylon
c Stachytarpheta jam.
c Desmanthus
c Sida procumbens
c Euphorbia mesen.
l Opuntia dillenii
l Scaevola plumieri
lc Canavalia
la Hymenocallis
lc Euphorbia heterophylla
c Bidens ~~leucantha~~ alba
lc Atriplex pentandra

Aug. 3 - Tortugas to Key West
Sea east of Tortugas a dull slightly greenish blue - very quiet.
Marquesas has a very convincing atoll shape. (photos)
West of Marquesas the bottom pattern is of sand and brown patches that suggest quantities of algae
Suggestion of a secondary lagoon a bar on n. e. side inside of ring. This is very shallow, seemingly not connected with "tidal channel" in bottom beside it.
Another series of channels in mangroves leads right into a channel in the lagoon bottom.
Remarkable regular patterns in sand patches on bottom east of Marquesas.

Boca Grande Key has a lagoon-like pond. mangroves on north side, grass(?) on south. Mangroves over east and west lobes.
Third large one from end also has a pond. Small ones all are solid patches of mangrove.
(to p. 37)

Aug. 3 – Loggerhead Key

Almost nothing growing under Casuarina.

Sporobolus bears lines of shoots along shipmx.

Casuarina borne an open irregular wood to 20 m. tall.

Between it thickets of Cordia sebastena, scrub of Suriana and Opuntia.

Along east shore a low dune ridge, about 2 m. above h.t., cut to a sharp escarpment by waves.

A number of beds of submerged beachrock along this shore just outside the present beach.

A caulescent Agave with antrorse prickles on edges of lvs. forms thickets in the Suriana. Agave sisalana, also forms patches.

Suriana scrub on most of south end which is open, free from

pvs. about 10" x 1"

Plants

Cordia sebastena
Euphorbia heterophylla
(all linear lfts.
E. mesembrianthemifolia
Lesuvium portulacastrum
Melanthera nivea
Tournefortia gnaphalodes
Uniola paniculata
Hymenocallis
Agave sp.
Ambrosia hispida
Cenchrus echinatus
Canavallia
Conyza canadensis
Agave sisalana
Ipomoea tuba
I. pes-caprae
Sporobolus virginicus
Panicum maximum
Catharanthus roseus
Lesuvium portulacastrum

Birds
Mourning dove

Casuarina for most part.
Ambrosia hispida
here & large patches
with a few pos Iponoea
plants Iva on beach
ridge.
Spirobolus fairly
general but not
abundant, Termopsis
occasional on sand ridge.
Juniana is locally
dead & partly so
around Ambrosia patches
Iponoea tuba local
on Juniana.

Near s. end an opening
in Juniana has a
mixture of Cyperus sp.
Euph. mesen., Euph. heteroph.
Boerhavia, Iponoea tuba.

Nearer end the opening
is dominated by Uniola.

along west side is lower
newer (?) sand flat,
with sparse Uniola.
Iva, scattered Juniana,
etc.
Higher toward end
being reclaimed. (photo)

Little veg except sparse
Uniola under Casuarina
(photo)

West half more
less open agave sisalana.
Patch of Panicum maximum.

Beach rock along central
part, perhaps intertidal
or just below. One strip
several beds. Northward
comes closer to surface
and near old Cab crest
is above surface of water.

a high sand ridge
1 m. + all along ½ half
of W. coast.
Brush often Suriana
scrub about 1 m. tall
much Agave sisalana
much Opuntia
The central part and
around the old Carnegie
laboratory is very much
disturbed, no significant
vegetation pattern. Casuarina
and Cocos abundant here
Cordia thickets, also, and
Hymenocallis.

There seems to be no
rock nor gravel above
high tide level on this
key. Beachrock below.
The sand in general is
Halimeda (sample)

Winds during winter
said to be from N.W. very
strong, at times for many
days at a time. Changes
outline of keys very much
at times.

General – Tortugas Keys
Birds –
On Bush Key are very
numerous ~~to~~ sooty terns,
a great many of
them fully grown young.
Said to leave in middle
Sept. and return in April.

Small colony of frigate
birds on Bush Key.

A white heron with yellow
bill on Garden Key, flew to
Bush Key.

A willet on Long Key.

A large number of common
noddies on Bush Key, nesting
with mostly almost
grown young, fully feathered.

Several turnstones
along beach, Bush Key.

Several Royal terns
flying bet. Garden
and Loggerhead.

Aug. 3 – Loggerhead Key
~~Flat Sand sand inlet~~
on calcareous sand

4	3026	Salvia around lighthouse building	flowers blue-purple.
1	27	Bursera simaruba Sarg. occasional in buriana scrub	shrub 2 m. tall, sterile.
1	28	Capraria biflora rare around lighthouse building	
3	29	Sporobolus virginicus L. common generally	forming loose sod in sand
1	30	Euphorbia prostrata Ait. around lighthouse building	prostrate, purplish.
1	31	Euphorbia hirta L. around lighthouse building	prostrate
1	32	Eragrostis amabilis (L.) local around lighthouse building	
4	33	Cyperus planifolius? L.C. Rich. common in openings in buriana scrub.	small tufts.
5	34	Solanum very local in buriana scrub	shrub 2 m. tall; ripe fruit bright red.
3	35	Boerhavia occasional in openings	– prostrate; flowers rose-purple.
3	36	Usnea common on dead buriana twigs	
3	37	(lichen) common on dead buriana twigs	bright green
1	38	Uniola paniculata dominant in many openings	culms erect
2	39	Ambrosia hispida Pursh dominant in certain openings	prostrate, inflorescences erect.
4	40	Iva imbricata Walt. locally common on sand ridges and flats.	– dense shrub to 0.6 m. tall, leaves bright green.

4	30 41	Cenchrus very local in opening in furiana		culms procumbent.
3	42	Caesalpinia very local in furiana scrub		tough tangled vine; sterile.
3	43	Tournefortia gnaphalodes common locally	(L.) R.Br.	low bush
3	44	Ipomoea pes-caprae (L.) Roth occasional in openings		prostrate; flowers bright purple.
2	45	Cenchrus occasional in openings		tufts of spreading culms.
3	46	Euphorbia heterophylla common in openings		much branched herb, leaves variable, bracteal leaves red at base.
1	47	Panicum maximum local, one patch near building		up to 1.7 m. tall.
2	48	Ficus one tree near lighthouse		large tree, fertile branchlets on trunk.
1	49	Argemone mexicana one plant near lighthouse		branched herb.
2	50	Hymenocallis very common		somewhat caespitose, ~~scapes~~ leaves distichous, scapes terminal, sharp edged, perianth white, ~~sta~~ stamens webbed.
3	51	Chloris petraea SW. very local, near buildings		
3	52	Ipomoea tuba (L.) G. Don occasional in furiana scrub and in openings		twiner; flowers white, faded in late forenoon.
3	53	Scaevola plumieri (L.) L. local, 2 patches and a few bushes on beach and sand flat.		shrub 0.6 m. tall; leaves fleshy; flowers white.

Garden Key - on top of wall
Boerhavia
Cenchrus echinatus
Cenchrus
Bidens leucantha
Stachytarpheta
Sida procumbens
Conyza canadensis
Capparis
Cynodon
Melanthera
Euphorbia mesem.
Eragrostis domingensis
Tpuntia dillenii
Portulaca oleracea (red form)
Ipomoea pes-caprae
Casuarina (seedlings)
Chloris petraea
Canavalia rosea
Bursera simaruba (sapling)
Cyperus planifolius

(from p. 25)
all of keys west of Key West except a few bars and one small one s of Boca Grande are completely covered by mangroves.

Key West is completely covered by city. but many little mangrove patches in water north of city. Extensive weedy land around airstrip.

East of Boca Chica a great complex of keys. On north side hundreds of little mangrove patches, locally forming a maze. Some larger, all mangrove-covered. Tidal channels in them mostly open at both ends. Eastward the mangrove keys have more exposed bare flats around them.

West of Flamingo Table 1a. is cut by a number of canals, dug many years ago in an attempt to drain the swamps. These seem to cause mud to be stirred up in the waters they connect with.

1962 Florida

Aug. 3 - Garden Key
on flat sand on north side of Key

43054 4		Cyperus planifolius R.Br. L.C. Rich. common	Rich.	caespitose
1	55	Cyperus planifolius R.Br. L. C. Rich. occasional		
2	56	Chloris petraea SW. very local		culms ascending to erect.
4	57	Canavalia occasional		vine, flowers magenta.
1	58	Avicennia germinans (L.) L. seedling established at top of beach		
	3/4	same - on top of wall of Fort Jefferson		
1	59	Cenchrus echinatus L. occasional		culms depressed, spreading.
3	60	Cenchrus occasional		culms depressed.
3	61	Boerhavia common		stems prostrate to slightly ascending, becoming paniculate
		same - inside ruined Fort Jefferson		
2	62	Euphorbia sheltered spot		erect, tips arching.
3	63	planted tree		small tree, 6 m. tall.
2	64	planted tree		small tree, 4 m. tall.
1	65	Lawsonia inermis planted tree		small tree
1	66	Heliotropium curassavicum L. very local		glaucous; flowers white.
1	67	Desmodium canum (Gmel.) Schinz + Thellung local		

1963 Florida

43063 Waltheria indica L.
rare
. 69 Psidium guajava L.
planted shrub

Aug. 5 - south of Homestead
along limestone road
embankment above ditch.

. 70
rare
4 71 Kosteletzkya virginica
locally common at water edge
4 72 Eupatorium coelestinum
common

Aug. 5 - Key Largo, 8 miles north
of Lake Surprise
3 73 Trema lamarckiana
common in coastal scrub
on raised reef limestone.

Aug. 5 - Key Largo, 6 miles north
of Lake Surprise.
in low forest on raised reef limestone
7 74 Callicarpa
occasional
4 75 Bourreria ovata
occasional
2 74 Lantana involucrata
occasional
1 77 Morinda royoc
common
3 78 Guettarda
common

to p. 46

Dry Tortugas atoll

erect; sterile.

shrub 2 m. tall; flowers white.

rays white

~~flow~~ erect, main stem unbranched; flowers pink. heads purple; herbage not aromatic.

shrub 0.5 - 1 m. tall.

erect, sparsely branched, ripe fruit purple.
small tree, flowers white, fruits orange, fleshy.
~~7~~ shrub 1.5 m. tall; fruit purple.
shrub, to 1 m. tall; flower white, fruit turning yellow.
tall shrub; fruit immature.

1962

Aug. 5 - trip from Miami to Key Largo
~~Mangrove~~ Road across
everglades separates the
influence of salt water, which
results from drainage, from saw grass.
12625 on oolitic limestone
fill along road across
mangrove swamp
Spermacoce
Euphorbia
Eustoma exaltatum
12633 Jewfish Creek.
Lake Surprise
Key Largo - emerged reef.
Scrub forest up to 5-6 m.
tall, dense but irregular
in places. Much Metopium.
Bursera. Piscidia
Rubiaceae abundant.
Chiococca, Psychotria
Morinda, Guettarda

Trees about 1-2 m
apart 5-8 cm. dbh. Irregular
sparse shrub layer
1-2 m. tall. Nothing on
ground except sprouts
and seedlings, not many
of these.
Vines - Vitis rotundifolia
Cissus sicyoides, fairly abundant

ground surface broken
coral rock with a
considerable accumulation
of litter and partially
decomposed litter, giving
a false impression of
smoothness as surface.
(Photos - begin 62-10 perhaps 8 frames)

Beyond this, after an
almost imperceptible
change to lower elevation
the forest is replaced
by a Palbergia scrub
about 1 m. tall, with
scattered emergent trees.
Then a zone of Batis
with scattered shrubs,
this only about 20 m + wide.
Then a strip of mangrove,
Rhizophora Laguncularia
Avicennia, about 20-30 m.
wide, ~~5-6 m. tall~~, then
the sea.
(photos of edge all around).

Operation Bullsnake
Boricua
future

photos

Farther north, on sl.
higher ground, the forest
becomes taller, Lysiloma
dominant & at least common.
On the bay side the forest
is large, 8-10 m.; this gives
way to mangroves.

The reef has a cap of a dense soft limestone, smooth on the surface. Forms rather thin patches at about the edge of the Batis and somewhat into the Halimeda scrub. Coral shows through locally. (samples).

On east side of road north of Key Largo large area of dwarf mangrove about 1 m. tall (Rhizophora) Do not grow taller except on disturbed soil of road embankment, where they reach several times as tall. The scrub formed by the Rhizophora is closed or almost so. No obvious explanation of dwarfing.

43079 2		Dalbergia abundant, forming a scrub in open places, undergrowth in forest	scrambling shrub
3	80	Chiococca alba abundant in undergrowth	vine
1	81	Guettarda occasional	shrub; fruit immature.
3	82	Psychotria common in undergrowth	shrub 0,8 m. tall
1	83	Callicarpa occasional	unbranched, flowers white
		Aug. 5 – 8 mi. n. of Jewfish Cr. on canal fill road bank in mangrove swamp	
1	84	Eustoma exaltata (L.) G. Don rare	very glaucous, flowers light purple.
1	85	Spermacoce common	erect, flowers white.
3	86	Euphorbia bladgettii common	

1962 Virginia

Aug. 17 - Sleepy Hollow

labels written

in tall bottom-land forest

43087 Tipularia discolor
occasional

" 88 Aplectrum hyemale
rare

" 89 (grass) Cinna arundinacea L.
common locally in moist
open spots

" 90 Cryptotaenia canadensis
occasional

several,
pseudobulbs pale grayish,
scape erect, leaves none
at this season; flowers
dull brownish purple, column
pale green.

pseudobulb single, pale
grayish; leafless at this
season; scapes erect, fruit
pendent.

culms erect, solitary.

erect

1962 District of Columbia

Aug. 14 - Kenilworth gardens
Large series of ponds of varying sizes from a few yards across to half an acre or so, with various species of Nymphaea. Nelumbo in some - in one or two a very handsome species of Jussiaea with a large bright yellow flower, a slender fruit, and stems densely soft pubescent. Hibiscus moscheutos and other shrubs around edges. Many of the hibiscus are large pinks or even red varieties. Deep red ones very handsome. Iris pseudacorus also common in margins. A purplish-green, dirty looking bloom is very obvious on some of the ponds.

N. lotus + N. luteu + hybrids

Between the ponds and the Anacostia River is a strip of tidal swamp with Salix nigra, Ulmus, Prunus serotina, Fraxinus, Acer rubrum, Betula nigra - different ones dominant in different areas. Zizania aquatica in margins, also Impatiens Sambucus, amaranthus

Viburnum much Vitis

Around the south and southeast sides is a broad strip of apparently natural marsh more or less dominated by Typha, but with abundant Polygonum punctatum and Impatiens capensis, some Amaranthus cannabinus, a little Zizania, and another large grass (at least superficially like 43089), and Sagittaria scattered in the marsh are patches of Alnus serrulatus, Hibiscus moscheutos, Cornus amomum, either mixed or in separate patches.

tidal

Along the path a strip of more or less open water with Peltandra virginica and ~~a Nuphar Caltha palustris??~~ some Pontederia.

The Typha marsh has the vegetation in 2 strata - the Typha about 2 m tall, the Zizania and Amaranthus about the same; the Polygonum and Impatiens and Sagittaria forming a definite layer about half as tall. Locally Zizania is dominant. Locally Rhynchospora.

1962 Virginia

Aug. 19 - Orkney Springs

Mixed forest, pine oaks, etc. with a low shrub layer of Gaylussacia baccata, Vaccinium stamineum, etc. mostly Ericaceae, some small Nyssa.

The forest is very dry. Moss very abundant, forming in places large patches or an almost continuous layer, this dry, where made of Leucobryum it is cracked into segments.

Aug. 20 - upper part of slope from Big Meadows to Fisher Gap.

open to closed second growth low zonal forest - of Betula populifolia, Pinus spp. Prunus serotina, Quercus spp. Fraxinus, Liriodendron, Pyrus, etc.

Many herbs in flower, esp. in openings.

Chrysanthemum leucanthemum
Allium cernuum
Solidago arguta
Monarda clinopodia
Aquilegia canadensis
Daucus carota
Prunella vulgaris
Silene stellata
Aster macrophyllus
Achillea millefolium
Oxalis (europea)?
Centaurea maculosa
Hedyotis purpurea v. tenuifolia
Plantago lanceolata
Impatiens pallida
Eupatorium aeratoides
Arctium minus
Polygonum persicaria
Cichorium intybus
Lobelia inflata
Solidago bicolor
Cimicifuga racemosa

cacalia atriplicifolia
mediola virginica

Labels typed

54 1962 Virginia

by H.K. Aug. 19 – ½ mile ~~south~~ west of Old Rag View Overlook, on Skyline Drive. near mp. 47 mile post in spring choked with sedges and moss.

30
4 ~~3~~ 91 Chelone — large clump, stem about 1 m. long; corollas white with dull purple orifice.
X2 — root crown deeply buried.

X3 92 Scirpus
common

X1 93 Carex
common

X1 94 Habenaria — past flowering – root
common — fleshy, horizontal.

X1 95 Epilobium — flowers pink.
occasional

X1 96 Botrychium
rare

X1 97 Hydrocotyle americana L.
common

X1 98 Juncus — flowers ~~dark~~ red.
common

Aug. 20 Big Meadows, slope toward Fisher Gap in low scrubby second growth woods.

X2 99 Viola palmata L.
common in dense shade

43/00 Galium circaezans Michx. — base of stem and roots orange
X1 rare

X2 01 Luzula — culms solitary.
very local in moist densely grassy place on slope

labels typed by N.K.

1962 Virginia

43102 Solidago arguta Ait.
common

Aug. 20 - slope west of Big Meadows, trail to Lewis Falls
in mixed oak forest

03 Thelypteris hexagonoptera
locally common

04 Thelypteris
rare

05 Corallorhiza maculata
rare and local

06 Monotropa hypopitys var.
rare

07 Liparis liliifolia
occasional

08 Monotropa hypopitys var. americana
occasional, locally common

09 Goodyera pubescens
very local, under oaks

Aug. 20 - low hill north of Big Meadows swamp
in low mixed second-growth woods.

10 Amphicarpa
locally abundant in openings

11 Lycopodium complanatum var. tristachyum?
local

ctd. on p. 60

erect, flowers bright yellow. (petiole winged)

stem bronze, flowers bronze, lip white with deep purple spots.
stems reddish.

capsules winged.

stem pale yellow, flowers dull yellow.
leaves firm, gray-green, veins white; flowers white.

tangled in herbaceous vegetation; affected by powdery mildew; small tubers on rhizomes; flowers dull rose purple.

forming a close mat, rhizomes apparently varying from buried to almost superficial.

Aug. 20 - Big Meadows.
Slope west from
trailer camp and picnic ground
Thick second growth
woods of oaks, Betula
alleghenienis, Fagus nigra
Prunus serotina, etc.

Plants in flower (not noted above)
Lapatea canadensis
Hieracium paniculatum
Campanula divaricata
Goodyera pubescens
Monotropa uniflora
Monotropa hypopitys.

Woods and meadows around swamp
plants in flower (not noted above)

Hieracium scabrum
aster macrophyllus
Solidago puberula & nemoralis
Rhus glabra
Lactuca (yellow)
Cirsium discolor

In swamp - in flower
Cirsium odoratum
Sanguisorba canadensis
Cicuta
Spiraea latifolia
Vernonia glauca
Lobelia cardinalis
Epilobium
Hypericum mutilum
Rudbeckia laciniata
Eupatorium perfoliatum
Conium maculatum

1962 Virginia

43112

X1		Solidago occasional in openings	flowers yellow.
		Aug. 20 - stream bed at lower end of Big Meadows swamp in dry beds of intermittent stream	
X3	13	Scirpus occasional (commoner in swamp)	caespitose
X3	14	Isoetes common in dried pools	
X1	15	Cicuta: common (abundant in opening in swamp)	flowers white
X2	16	Thalictrum dioicum L. common (also in swamp)	erect.
X1	17	Conium maculatum? occasional (also in openings in swamp)	erect,
X4	18	Juncus occasional ~~in mud~~	caespitose, fruits maroon ~~color~~
X1	19	Epilobium occasional	flowers pink
		Aug. 20 in drainage ditch at upper end of Big Meadows swamp in wet sandy mud	
X2	20	Epilobium common	
X	21	grass abundant	decumbent at base.
X3	22	Eleocharis common	small tufts, culms erect,
X1	23	Juncus occasional	dense tufts
X1	24	Juncus occasional	~~small~~ tufts
			dense tufts

~~X~~ 1962 Virginia

43125 Gratiola neglecta
X/ common

Aug. 20 lower end of Big
Meadows swamp
in Sphagnum
matted in other vegetation

X2 26 Habenaria
locally common

X1 27 Lycopus
common

X2 28 Galium tinctorium
common

X2 29 Epilobium
common

Aug. 20 west slope of
Swift Run Gap

in flat valley bottom
in deep woods.

X1 30 Epifagus virginiana
uncommon - under large Fagus
grandifolia

X1 31 Coralorhiza
rare

X1 32 Orchis spectabilis L.
occasional on ~~dry~~ dry ground

X4 33 Hydrocotyle americana L.
locally abundant in mud
along stream

X1 34 Lobelia puberula var. simulans Fern
rare

stems very fleshy,
prostrate; flowers
white

rhizome fusiform,
stolons filiform; flowers white.
erect; weak; flowers
white, both 3- and 4-pid.
flowers pink.

plant bronze, buds purplish.

plant bronze, buds unopened;
base bulbous, above the
white coral-like rhizome.

forming a tangled mat

flowers blue-purple

1962 Virginia

43134a Ranunculus
X2 rare in wet ground along stream
X1 35 Saxifraga micranthidifolia (Haw.) Britt.
locally common on wet
ground along stream
X3 34 Mimulus alatus Ait.
locally common on
wet streambanks
X2 37 Galium lanceolatum
very local on dry rocky ground
X1 38 Geum canadense
occasional

aug. 20 – Pinnacles
Picnic Ground
X5 39 Carya ovalis (Wang.) Sarg.
occasional

erect

inflorescence dry

flowers lavender

stems almost erect.

~~&~~ petals white.

small tree 8 m. tall;
fruit immature; with
prominent keels in
upper half.

1962 Minnesota

Aug. 23 - flight from Minneapolis to Portland
Land west of Minneapolis is generally green, has many lakes, they varying from clear and dark to muddy. The land is largely cut into a patchwork of mostly rectangular fields, blocked off into squares by section-line roads. These fields are mostly cultivated. There are some small patches of wood and wooded stream bottom lands and lake margins. Many patches of wood and (probably) marsh reflect old ponds and stream courses. Some fields are tawny yellow, others gray, others black. Some lakes are partly changed to bog. No large patches of forest.
Westward the amount of forest rapidly diminishes. Perhaps the amount of uncultivated land - pasture not cut into small patches increases. Still many lakes.

In a short time trees are almost lacking. Por visibility to about the Dakota border. Then a landscape (from 39000') with myriads of small ponds & potholes. Westward these diminish rapidly in number. until they are very sparsely distributed & absent.
Very soon the fields assume an almost completely rectangular pattern, though not uniform in size & orientation. almost all n-s. - e.-w., but largely long and narrow, more e-w alignment than n-s. More brown than gray.
Por visibility
From time to time through openings in the clouds the landscape is seen to change from a completely cultivated one to more and more pasture with only stream ravines as discernible features.
East of the Black Hills white erosion scars are prominent. The Black Hills show up as an almost completely black wooded area.

1942 Montana

West of the Black Hills the terrain, though at first very flat, shows more and more relief. No trees until we cross a river that conspicuously meanders through a wide, somewhat wooded, partly cultivated bottom-land. Otherwise no cultivation, or locally large patches of dry land farming, indicated by rectangular pattern lighter than the general brown of the landscape.

As the relief becomes more pronounced narrow gallery forest appears along streams, then considerable dark forest in areas of mountains. Flat plains between mountain patches are grassy. Occasional cultivated, green areas in river-bottom lands.

Generally, the rougher, more rocky the land the more wooded, except for some steep eroded slopes and cliffs. These

generally south and west facing. North and east slopes generally wooded.

Westward, flat topped mesas and buttes become prominent features.

Then really rough mountains - prominently dendritic drainage patterns flowing generally north. Relation between these and distribution of forest not clear & obvious.

Main roads show up, curiously, in red, even in a dominantly white & light gray and tawny landscape.

Forest greatly diminishes westward.

Broad strips of green cultivated land along north-south trending river.

West of this mesa-land with bleak, wooded complex stream drainage going east from it and west and from it.

Another green stream valley, joining the east one far to the north. It runs s.w. → n.e. Lovely

of it dry treeless, grassy high plains - gray-brown.
Far to north some forest. Stream more and more from west with wide cultivated area.
Westward vast plains with some relief locally. Dry cultivation on flatter areas. Mostly dry grass. More and more cultivation westward - yellow grain fields, but curiously banded - dark and yellow in subequal strips.
Far to north mostly forested.
Along course and for a distance northward the same stripes pattern in large patches, forming a mosaic with dry grassland. The darker stripe in the cultivated area appear to be similar dry grassland.
Billings, mont.
No more forest to north.
Some narrow gallery in ravines forming a w-e. dendritic pattern.

Then bare ravines
Still some striped cultivation.
Then treeless brown plains and small mountain ranges, narrow green cultivated bottom lands.
Then grassy plains with prominent w-e. drainage, gallery along ravines.
Then a tremendous mountain range mostly wooded, but with a large sharp peak that is bare, with snow on its north summit slopes.
West of this prominently cultivated land predominates, but with much dry grassland too, the grain in and landscape eroded.
Cultivated patches become more and more sparsely scattered.
Far to north some prominent but low, strike scarps.
Then a densely wooded mountain mass.
Then much yellow

1962 Montana

grain, fading out to dry grass on country with some relief. This more accentuated westward, to a prominent n.e - s.w valley and ridge strike fault system.

Winding between two sections of this a river, with a wide rather green basin directly on course with a small city and an intricate system of stream meanders - probably marshy & formerly so.

Then broad grassland, high plains with scattered grain fields and some relief.

A n.-s. narrow green bottom-land with a tightly meandering stream. Then a high but rather narrow mountain range, about half wooded & smooth grassy valley, then another largely wooded mountain range. this one very extensive

and with only minor areas of grass.

Butte Montana at west base of these Mts. Large open cut mine. High plains west of Butte. Country is both wooded and rough.

These more wooded mountains. then a ~~broad~~ ~~valley~~ wooded range - ~~the Bitterroot Mts.~~

Northward these become bare and eroded.

Then the tremendous Bitterroot Range, mostly densely wooded except some very large peaks which evidently extend above the forest, and are grassy & bare.

This vast forest extends a long distance, but far to north is grassland.

Then mostly forest. as far north as can be seen.

Road systems in parts of the mountains very intricate - no apparent reason.

Then mountains become locally bare and grassy over large areas, forest where wooded, becomes sparser, & then an

valley,

1962 Idaho

area of tremendous ruggedness, high peaks with patches of snow, deep east-west canyons. Forest sparse on roughest part, dense on more moderate slopes to westward.

Then forest becomes very sparse and steep mountains are largely bare. Forest still on gentler slopes. Much forest to north.

Country now a very rough jumble of mountains and a mosaic of bare rock and forest of varying density. Steeper slopes tend to be bare.

Westward ~~if~~ dense forest becomes more continuous.

Some local mountain parkland. Road scars on forested slopes very conspicuous.

Relief becomes gentler but forest almost continuous and ~~very~~ dense for a long distance.

Then more open country but still predominantly

forested.

To northward a large open but rather rough area - flatter parts in grain becoming dominant westward. Forest still along course but gradually fading out to grassland. canyons still with north facing slopes wooded.

Country along course still mountainous, to north a large rather level basin, mostly cultivated.

This bounded on s. w by Snake River Canyon - a tremendous bare gash in the land. South of it, and locally north of it large patches of forest.

West and south very rough mountains, practically treeless, the Snake R. canyon meandering through them. Northward a forested area north of that the cult. basin continues.

Then along course, south of Snake and

partially wooded mountains; north of them and west of Snake, high bare mountains continue. North of them broad plain, cut by canyons, level parts in grain.

Along course the landscape now is a high plateau but very deeply dissected, leaving flat mesas on which are grain fields here forest on moderate slopes. Steep slopes bare and barren. Spectacular deep canyons cut this. Plateau becomes densely wooded.

To north the dissected plain continues, mostly in grain. Between it and forested plateau, very rough partly wooded mountains. These then extend south at least to course. become less continuously wooded. Forest in canyon bottoms and on north slopes.

Then forest mostly disappears. The

belt of dissected plain swings south to course.

Columbia River Basin.

High Peaks of cascades in distance to west (20 mi.)

Landscape now about 1/2 to 2/3 in grain, rest bare and barren except some bottom lands of a westward flowing river (Snake?)

Texture of country along course interesting - main streams flowing w. n. w. to Columbia. Tributaries flowing s. w and n. e.

Columbia here is a great reservoir — lower bottom lands of tributaries broad, green, cultivated.

Dam across Columbia where it flows west, just above a tributary from south.

Away from river and tributaries vast plain, brown, with some yellow grain fields locally. Some rough wooded areas.

Strip of grain well to north of Columbia R.

Mt. Rainier, Mt. Adams
~~Mt. St. Helens~~ ~~Mt. Hood~~, ~~Mt. Jefferson~~,
on west horizon.

Vast brown plains
continue along both
sides of Columbia -
large areas of grain
away from river.

In distance to north
and well ahead a large
forested area. with
grass north and south
of it. Forest continuous west to Cascades.

Columbia comes close
to course, even below
the dam a very impressive
river. As it approaches
course it becomes
incised, with prominent
cliffs. Grain fields
and grasslands (fallow
land?) form a vast
mosaic. This extends
along the terraces
along both sides of
river.

A large island in river.
Here river is again very
wide, obviously backed
up by a dam.

Some dunes on south side.

Course crosses river.

Country on north terrace
mostly grassland.

River swings north
again. Terraces become
dissected and hastily
wooded

The Dalles.

Mt. Hood on left. Also
Mt. Jefferson.

The ~~mountains~~ hills are
all pine cones.

Country generally wooded.
rough. Some scrub
patches. Cleared right-of-way.
Patches of fine forest-
tall conifers. Some scrub.
some bare peaks and
rock ridges. Old
fire scars, logged
off areas. - Latter
especially extensive
n.e. of Portland. - in fact
almost continuous
over large areas. Most
slashed off land, by
far, than forest in
the region north of
Columbia and east
of Portland.

Approaching area
land flattens out
and forms a mosaic
of cultivation, pasture,
some forest in canyons.

Large grayish marsh
just north of river.

1962 Oregon

Aug. 24 – trip from Corvallis to coast, by auto.
west from Corvallis (rt. 20)
Philomath - cultivated land with some large oaks.
West of this a range of hills partly wooded with mixed second growth.
A common oak that looks like Q. lobata in valleys. with Alnus, Acer macrophyllum, Fraxinus sp.
Conifers on slopes and hilltops.
Higher up most of forest is mainly coniferous.
On the western slope of the range, near Burnt Woods a mosaic of lower broadleaf wood with conifers.

Toledo Salt Marsh –

Expanse of tidal marsh, perhaps 30 acres.
Largely a matrix of grass, with admixture of Atriplex patula, and locally salicornia, patches of Grindelia, Potentilla anserina etc.
Some large rotting logs provide a substratum for Gaultheria shallon, Pseudotsuga ~~seedl~~ saplings and stunted trees, Achillea, Vaccinium, Polypodium

Reef brown muddy silt.

Yaquina Bay State Park
Bluffs with Pinus contorta, low trees up to 4 m. a few small Pseudotsuga. Thick undergrowth at least locally of Gaultheria shallon with some Lonicera involucrata.

Newport
Meadow of Carex obnupta and Potentilla anserina, up to 2 m. tall in wetter spots, back of active dunes and in front of

high stabilized dunes, these with Rubus, Alnus, Gaultheria, Lonicera inv. Picea, Pinus contorta, etc. Grassy meadows also, with clumps of Pinus. Pteridium

On active dunes - Cakile, Abronia, Arenaria, Convolvulus soldanella, Polygonum paronychia, Franseria chilensis, Lathyrus, Vicia, Potentilla, Solidago, etc.

Cakile one of most pioneer species.

Photos of Pinus contorta and of general landscape showing windshear. Also of Carex meadow.

Outside of dunes a broad sand flat.

Wreckage all over this flat and back in dunes.

1 mi. n. of Waldport

A number of parallel rows of high dunes, upper slopes mostly active, locally wooded, many species of psammophytes on active parts, forest, mostly Picea, in depressions and on one outer ridge, this being badly sand-blasted.

In forest in depressions, also on unwooded steep sides, a dense scrub undergrowth of principally Gaultheria, up to 3' or even more in. tall.

Many photos - ending rolls of Kodachrome (K-6) and b.+w. (62-10).

1962 Oregon

Aug. 24 - Toledo, ~~Salt Marsh~~ near mouth of Yaquina River

in tidal marsh

43140 Grindelia stricta
X2 common

X2 41 Salicornia ambigua (= virginica L.)
common along tidal channels

X2 42 Salicornia ambigua
common along tidal channels

X2 43 Pyrus fusca Nutt.
occasional at edge of

X1 44 Juncus
common

X1 45 Galium aparine L.
common in edges of

X1 46 Salix
common around

~~X1 Common locally~~

X1 47 Glaux maritima
common locally

X1 48 Jaumea carnosa
rare

X1 49 Orthocarpus castillejoides
occasional

X1 50 Triglochin maritima
common

X2 51 Pseudotsuga menziesii
in edge of

X1 52 Aster
common

stem woody at base, sending up herbaceous branches; rays and disk yellow.

— stems terete, fleshy; fls. staminate

— stems terete, fleshy; flowers pistillate

— small tree, fruit more or less cylindric, immature.

— stems slender, terete.

— stems weak, reclining on other plants; fls. white.

— shrub 3 m. tall; stems.

sub-fleshy

fleshy; flowers yellow

subfleshy; bracts white-tipped

leaves subterete; spike erect.

~~X1~~ shrub 3 m. tall, spreading; leaves white beneath.

— stems erect from horizontal rhizomes, rays lavender, disk yellow, turning reddish.

1962 Oregon

43153		Polypodium vulgare v. occidentalis on rotting log	fronds very young.
X 2			
X1	54	Vaccinium ovatum on rotting log	small shrub; ripe fruit black.
X1	55	Gaultheria shallon common on rotting logs	small shrubs; ripe fruits black.
		Aug. 24 – about 2 miles south of Yaquina Bay Bridge	
		sand dunes	
X2	56	Rhododendron macrophyllum common in low woods a fixed	shrub 2.5' m. tall.
X2	57	Carex obnupta dominant in moist meadow between	erect, to 2 m. tall.
X2	58	Fragaria chiloensis common on	runners extensive
X2	59	Franseria bipinnatifida Nutt. locally common on	prostrate, forming mats, inflorescence ascending.
X2	60	Arctostaphylos uva-ursi common on	– prostrate, forming mats
X2	61	Pentacaena ramosissima common on	– prostrate, forming small prickly mats
X3	62	Armeria maritima common on	– flowers bright pink
X2	63	(grass) local on	
X1	64	Franseria bipinnatifida Nutt. locally common on	prostrate, forming loose mats, leaves fleshy,
X2	65	Calsile edentula (Bigel.) Hook. common on outer, moving	– fleshy, much branched herb; fruits terete, swollen ~~flowers~~ petals light purple

1962 Oregon

43166 Polygonum paronychia
common

X2 Calsile maritima Torr.
X1 67 rare, on outermost

X1 68 Rumex maritimus var. fueginus (Phil.) Dusin.
rare, on outermost

X2 69 Goodyera oblongifolia
local ~~on~~ in open pine
woods on fixed dunes

X2 70 Maianthemum bifolium (Linn.) var. kamtschaticum (Gmel.) Wats.
common in pine woods
on fixed dunes

Aug. 24 - 1 mile north of
Waldport Lincoln Co.
on high dunes of fine sand

√2 71 Anaphalis margaritacea
locally abundant

√2 72 Agoseris aparginoides (Less.) Greene
occasional

√1 73 Poa macrantha
common

√3 74 Glehnia leiocarpa
common.

√3 75 Carex macrocephala
abundant, binding sand

√2 76 Franseria chamissonis Less.
common

√2 77 Abronia latifolia
common

√1 78 (grass)
common in sheltered open places

flowers pinkish white

leaves fleshy; petals
purple; fruit terete, not
conspicuously swollen.

leaves with irregular
white along midrib;
flowers white.
fruit fleshy, finely
red-dotted.

erect stems from
buried rhizomes; involucre
papery white.
caespitose

stolons very extensive

fleshy; flowers white

rhizomes deeply buried

prostrate below, distally
ascending, forming
loose mats.
prostrate, forming extensive
loose mats, flowers bright yellow.

1962 Oregon

431 79
~~4 2 1 79~~ Polypodium vulgare var. occidentale
local on steep sand slope on
√2 80 Salix
common in depressions between
√2 81 Poa macrantha
common on
√2 82 Pteridium aquilinum var.
common on ~~Cap~~ active

Aug. 25 - 3 mi. n. of Florence
at junction with Mercer Lake Rd.
in Thuja plicata swamp
√2 83 Blechnum spicant
abundant
√1 84 Sedum columbianum
common in undergrowth

√2 85 Darlingtonia californica
abundant in water and
common on Sphagnum hummocks

same - in pure words
√3 86 Myrica californica
common in undergrowth
√3 87 Arctostaphylos columbiana
common in openings

Aug. 25 - Cape Perpetua State Park
in dense mossy ~~spruce~~ forest
√2 88 Selaginella oregona
abundant but very local on
tree trunks.

~~Franklin~~ Co.
Lincoln

shrub 3 m. tall; sterile.

caespitose, stolons scarce or
lacking.
rhizome deeply buried,
fronds all about this size
(farther inland, on fixed
dunes much larger, more
conspicuously hairy beneath)

sterile fronds spreading,
young ones without
anthocyanin; fertile fronds erect.
shrub 2 m. tall, sparsely
branched; flowers white.
leaves and scapes erect;
tip of leaves with translucent
spots.

shrub 2.5 m tall, ~~fragrant~~;
fruit green.
shrub 2 m. tall, bark
smooth, dark red brown.

pendent

1962 Oregon

Aug. 25 - Cape Perpetua Viewpoint
Large promontory with steep bare cliffs and irregular forest of Picea on top and upper slopes. On south side aspect is rather dry - close undergrowth of Gaultheria.

Cape Perpetua State Park - canyon with big spruce forest - luxuriant undergrowth largely of Gaultheria, but ferns very abundant - Blechnum, Polystichum, Athyrium cf. filix-femina, Dryopteris dilatata (on log). Selaginella oregona very abundant on a leaning tree trunk, pendent. Mosses and liverworts abundant on trees, also lichens.

South of here the coastal bluffs are covered by dense matted low scrub of Gaultheria. Some areas of low spruce forest, badly damaged by wind and spray.

Southward the slopes are grassy. Then scrub and low forest of Pinus contorta with some spruce. This matted and windsheared on exposed areas. On steep slopes the scrub is mostly Picea.

South of Sea Lion Caves Alder covers bluffs.

Inland somewhat is a tall forest, to 30 m. of Pinus contorta, ~~Libocedrus~~ Thuja, etc. Undergrowth of Gaultheria, Rhododendron, Vaccinium, Arctostaphylos.

Low swamp of Thuja and a few Pinus contorta - open and mostly not more than 5 - 8 m. tall. Undergrowth of Ledum, Myrica, Tsuga, Gaultheria, and abundant Darlingtonia in wet Sphagnum and in water. On hummocks Blechnum.

Honeyman State Park -
Enormous active dunes, separated from a strip of smaller dunes ~~by~~ back of

the beach. The large dunes are gradually moving into the forest - largely Pinus contorta about 20 m. tall. Some spruce. Alnus and Salix are common. Heavy undergrowth of Gaultheria, Vaccinium, Myrica.

Much taller forest inland - 40 m. mostly spruce, hemlock, Thuja. with tall understory of Myrica, Rhododendron, Vaccinium 3-4 m. tall.

— Inland from Florence along st. 20. up Siuslaw River! Hills along sides of river, covered with coniferous forest, but considerable part has been logged off and is covered by scrub of Alnus forest. Acer macrophylla is common with Alnus on lower slopes. Valley bottom in pasture, where not flooded by dams. Alnus common in fence-rows and on river banks.

Farther up the valley considerable areas on slopes have been logged clean

and are now replaced by a chaparral-like scrub.

Just west of Triangle Lake 40 m. s. of Florence

Partly logged Pseudotsuga, with some Thuja, Alnus, etc. Undergrowth of Vaccinium parvifolium, Acer circinnatum, Corylus, etc. Polystichum munitum abundant on ground, not much else in denser parts of forest. Some Pteridium

Interior valley - flat cultivated land, scattered Quercus garryana, patches of wood - Quercus, Fraxinus, etc. Grassy rolling hills with scattered oaks and patches of oaks; small bushes

Aug. 20. Silver Falls State Park
Beautiful vertical drop.
Pseudotsuga - abies forest, 50 m.
Understory of Acer macrophyllum, A. circinnatum, Alnus.

1962 Oregon

Aug. 25 – just south of Triangle Lake in Pseudotsuga forest

43,89 Montia sibirica
in clearing

✓1

✓2 90 Prunus
edge of clearing

✓2 91 Alnus oregona Nutt.
abundant in edges of

✓2 92 Galium triflorum
common

✓1 93 Asarum
very local in paths

✓2 94 Linnaea borealis
local on steep dry bank

✓2 95 Polystichum munitum
abundant on ground

✓1 96 Vaccinium parvifolium
common in undergrowth

✓2 97 Acer circinatum
common in undergrowth

✓3 98 Corylus cornuta var. californica (A.DC.) Sharp
occasional in undergrowth

✓2 99 Vaccinium parvifolium
common in undergrowth

43,200 Athyrium filix-femina
✓4 3+1 occasional, terrestrial in moist place

flowers white, petals emarginate, veining pink

small sterile tree, 6 m. tall, bark rather silvery gray.

small tree, leaves glaucous beneath.

procumbent

rhizome prostrate, under ~~dead~~ litter, with strong ginger odor when crushed.

prostrate

ponds spreading to ascending

slender-shrub 2 m. tall, branchlets in one plane; fruits deep coral red

shrub 3 m. tall, stem slender, green.

sterile shrub 1.5 m tall.

shrub 2 m tall; fruits coral red.

1962 Oregon

Aug. 31 - trip Corvallis - Arcata via Eugene, Redspot.

Freeway east of Corvallis and south over through extremely flat land. intensively cultivated - small patches and strips of forest of Fraxinus oregona with some Quercus garryana along sloughs and in areas of poor drainage. Where the fields are left in grass there is an invasion of shrubs - possibly Salix lasiandra Willows & Prunus sp. along ditches.

Southward forest becomes much more abundant, much of it young and thickety. Hills are scattered over plain and are more or less wooded with conifers - the thicket on the flats is Fraxinus, Quercus, etc.

South of Eugene the flat Willamette valley pinches out and the hills get close together. Some Douglas fir on flats as well as on hills. Acer ~~glabra~~ macrophyllum becomes common along with Quercus, Fraxinus, Salix etc. in thickets and forest.

Road across mountains to coast along canyon of Elk Creek - Douglas fir second growth, with much admixture of Acer, etc. Patches of grass and brush on steep slope.

Rhus diversiloba forms an irregular understory in disturbed ~~around~~ open areas - - is a shrub to 3 - 4 m tall, robust but climbing other it is in contact with them.

Umpqua River

Below Elkton hills where denuded of trees, Cytisus scoparius forms a scrub, but only locally. Many such areas are grassy with Pteridium on talus slope, not where rock is close to surface. Much of it a scrub with Holodiscus, Corylus, etc. and Quercus garryana especially around

1962 Oregon

grassy glacier on steep rocky bluffs. Here may have been openings even in pre-logging times, where Oc dalli could have lived. Oak patches also on certain level places at foot of slopes, where there may have been Indian villages. The grass is distubbed very

Farther down the slopes have a mixed forest of maple, alder and douglas fir, this replaced by thick douglas fir forest. In valley bottom alders, etc have some moss on trunks. Some steep bluffs logged clear.

Much of the area is rather low forest, pure Pseudotsuga.

On flats along river well up into spruce pines also acer circinatum comes in as understory on flat, also up under Douglas fir on slopes. Where

river valley broadens out there are remnants of excellent sitka spruce forest.

Estuary extends up 12 or more miles. Tidal influence shows in a practically vegetation-free belt several feet wide on steep banks.

Down just above Reedsport are marshy flats with lupinus, Carex obnupta, etc. In this area hemlock (Tsuga heterophylla) almost replaces the Pseudotsuga, as an associate of Picea sitchensis.

Dune area at Hauser - fairly extensive area of active dunes. patches of Ammophila, scattered Poa macrantha. Clumps of salix. Patches of Arctostaphylos pumila. Patches of wood - Pinus contorta with Alnus, esp. in depressions. Some Arctostaphylos columbiana.

On active parts also Tanacetum sp. in patches, scattered Lupinus arboreus (mucho), patches of Rhacomitrium ericoides.

1962 Oregon

High dunes bearing spruce forest. Some trees dead, others burned to within 3 m. of top, but still living, fruiting.

About 10 mi. n. of Coquille - Chamaecyparis lawsoniana common in forest.

South of this forest is a thicket of Alnus with some emergent conifers.

Extensive salt marshes at Bandon, on S. side of Estuary of Coquille R.

S. of Bandon a large area of Ulex europaea 2-3 m. tall - in a mixed fir. Fairly extensive, flat area.

A broad strip, several miles wide, is of fixed dunes along most of coast. Some of them covered by a scrub of Arctostaphylos. Some wooded with Pseudotsuga, the understory of Rhododendron macrophyllum.

Southward along coast the bluffs and seaward slopes are grassy. Probably secondary.

South of Pistol River extensive fixed dunes, with Lupinus arboreus which is dying from a disease (or insect attack).

Del Norte Redwood Grove drier type has under-growth of Gaultheria, with Asarum. Much Alnus in understory. Occasional Douglas fir.

Mesic type has ~~Chrysolepis~~ Oxalis oregana and Polystichum munitum. Blechnum atypical

Clintonia andersonii and Scoliopus are character species. On drier types Rhododendron macrophyllum, etc.

In Oxalis type much vine maple.

A belt of Sitka spruce between redwood and coast.

1962 California

Sept. 1 - auto trip Eureka to Bull Creek

Flood plain of Eel River. Presently only flooded in lower part - up a few miles rejuvenation has gone on so that the river, even in flood is confined to ravine. Was covered by Sitka spruce up to about

then gradually replaced by redwood: also on sides of valley, upward replaced on sides by douglas fir, tanoak and madrone + other.

Eel River meanders from side to side of valley undercutting sides, forming rather bare cliffs of poorly consolidated sediments.

Above bottom mostly second growth redwood this after old style logging with bulldoz. etc. Modern logging with heavy machinery so destroy the environment that redwood scarcely regenerates.

Some virgin redwood along highway, but this will be largely destroyed by widening of highway.

Presently badly affected by highway - camping, etc.

first redwood forest - Rockefeller Forest and gravel along ~~South Fork~~ Eel River.

1 eq. (hor. + v.-w.) end b.-w. roll. to both Eel R.

next hod - Bull Creek flat grove with old gravel deposit with willow, ~~alder~~ to Fork Eel River.

next hod. 6 beginning of b.-w. 6-12 inside Rockefeller grove

Polypodium vulgare var. saxosum

1 or 2 alluvial terraces (?)

Pteridium aquilinum (Com. dist.)

Polystichum munitum

Woodwardia

Athyrium filix-femina

Tiarella unifoliata

Blechnum spicant

Pentaria tenella

Claytonia sibirica

Carex stipata (result of deer trimmed dist.)

Second story

Umbellularia (6 to 8 m)

Acer macrophyllum (mainly along stream)

Much bare ground.

Tsuga heterophylla

Pseudotsuga taxifolia

Thuja plicata

Alnus rubra

Picea sitchensis

Acer circinatum

Corylus cornuta var. californica

Rubus spectabilis

Vaccinium ovatum

Gaultheria shallon (dom.)

Viola glabella

Galium triflorum

Disporum smithii

Disporum hookeri

Smilacina stellata

1962 California

Bull Creek is carrying down great amounts of gravel from 1955 logging, which fills up the creek bed so it cuts laterally, undercutting the trees - perhaps 800 trees lost on Bull Creek in Rockefeller grove

Mounds around the bases of trees, up to .7-1m high, are earth, with only a few cm of litter on top.

Above these flats, ~~this~~ this far inland, on the slopes the forest changes immediately to a mixture of

area near "Tallest Tree"

ground flora
Achlys triphylla (prod. not sampled)
Trientalis
Galium triflorum
Blechnum spicant
Polystichum Munitum
Disporum smithii
Tiarella
Corylus in openings
Rithrocarpus
Acer

Bare ground with very thin Oxalis + Tiarella, scattered Polystichum patches of Achlys,

7 trees 17 (a 20) feet dbh.

1962 California

Sept. 1 — air trip Arcata – San Francisco

Sand flats opposite airport show some wind striation.

Solid fog layer to the foot of the mountains, for a short distance south; to just n. of Scotia.

Tops of coastal hills tend to be bare, especially on seaward slopes, but this clearly result of clearing in most cases, because of angular outlines.

Forest on west slopes sparse because of logging (many small roads forming a network. Some quite brushy.

The bare patches tend to be stable – little invasion of woody plants on many of them, others quite brushy. Brushy ones show evidence of recent logging in scattered sticks lying around.

Course is well inland with rugged wooded mountains westward. More and more open grassy areas southward, also more recently logged areas. Tremendous variation, from dense forest to dense scrub, to sparse forest, sparse

scrub, savanna, grass – with little evidence of pattern, little relation to topography. Network of logging roads and scars very conspicuous. A few patches of good timber still unlogged.

This course follows the S. Fork Eel River.

South of Angelo Place (?) are a number of very fine uncut small drainages, densely wooded, but badly logged ones are interfingered with them.

Well inland a very conspicuous strip that is mostly grass. A large area seaward of it is mostly uncut. But roads follow ridges around it, and logging spreading from it.

Along principal stream bottom lands are strips of redwood, where they have not been logged.

In these uncut areas there still seems to be a rather clear pattern, but the logging obscures it.

Another large uncut area a little farther south, a few prairie patches – not topographic reasons.

1962 California

much of this patch seems to be redwood.
Inland a fine mosaic of grass and forest on rough country.
Then comes over bare ridges with more bare area on west & southwest slopes. Some brush, some mainly the ravine are wooded. Some cultivation. Ukiah
Wooded ridges to west.
South of Ukiah the wooded ravines & grassy west slopes are apparently oak. Conifers only west of valley in which Ukiah located.
Chaparral, rather thin on many hills, esp on east and north slopes; more grass on west & south.
Little continuous forest area of any size from here on except some steep n. e. slopes.
Southward more and dense chaparral. Many burned areas. Locally incredibly eroded.
Then suddenly much more forest, but only a mosaic of patches with chaparral and grass.

Inland a broad, rather cleared valley. Course not far from coast. Some restricted areas of redwood.
A meandering rather large river - meanders very ancient and deeply entrenched in rough mountains, runs toward coast.
Somewhat south of this the forest suddenly stops and dry rolling hills with gallery forest in larger ravines fills area east of the large southward running cultivated valley (Napa??)
This rolling land brown with numerous wind breaks; a few small ponds. is very extensive. Southward it becomes rough and many headwater drainage are wooded or scrub covered, tailing down into gallery wood in ravines below.
Bay to south - prob. San Pablo Bay. The large valley ended at Black Point(?)
Large complicated reservoir just east of course.

1962 California

south of this larger patches of forest and dense scrub, and more numerous ones, tending to coalesce. Here another large reservoir, very complex. Coniferous forest on west side, chaparral with patches of forest on east. The gold ~~runs~~ ends into the e. slope of Mt. Tamalpais. W. slope here is chaparral, but w. of Tamalpais is a large area of grass with some oak trees and patches. Ridges tend more and more to be bare southward.

Thin chaparral and small patches of wood in ravines on Angel I.

A great tongue of fog extends in from Golden Gate clear across Bay. Fog covers hilly part of S. F. but flat part and bay are clear

Baccharis pilularis

Sept. 3. Santa Cruz Mts.

The east slope, from Saratoga up to Saratoga Pass is ~~so~~ mostly wooded, with some redwood not far below the summit. The grass is dry but other things are mostly still green - ferns etc. The wood is of live oak (mostly Quercus agrifolia), Acer macrophyllum, Quercus kelloggii (esp. on upper slopes), Umbellularia, Arbutus, etc. The ~~ridg~~ summit ridge s. e. of Saratoga Pass to the Red Heifer ranch, is semi-open, semi-wooded, with Pseudotsuga, Quercus kelloggii, Arbutus, Acer macrophyllum, Baccharis pilularis etc. Rhus diversiloba locally common, both erect (to 2 m. tall) and climbing.

The grassy and herbaceous vegetation of the open areas, rocks and roadsides, is rather dry, but such plants as Madia, Zauschneria, Chrysopsis, Fragaria, Potentilla, Haplopappus, Polygonum, etc. are still green. Ceanothus locally common along road. Acer fruiting heavily.

1962 Oregon

Coos Co.

Aug. 31 - Hauser, 4 mi. n. of Coos Bay, Coos Co.
on extensive active dunes of fine sand

43201		Tanacetum	spreading by underground stems; flowers yellow.
✓1		common, forming patches	
✓1	02	Salix	densely branched shrub 1 m. tall.
		common	
✓2	03	Salix scouleri	densely branched shrub 2 m. tall.
		common	
✓1	04	Spiraea douglasii	unbranched shrub 1 m. tall; flowers pink.
		rare on shallow ditch	
✓3	05	Polygonum paronychia	flowers pink
		common	
✓1	06	(grass)	
		rare	
	07	same - in moist open low place in active dunes	
✓2	07	Juncus	rhizome deeply buried, culms cylindric, wiry; not erect, emerging in lines from sand.
		common, forming patches.	
✓1	08	(comp.)	
		very local in patch of Juncus	
✓1	09	Eleocharis	
		rare in patch of Juncus	
✓2	10	Juncus	culms erect from buried rhizomes.
		common, forming small patches	
✓2	11	Lasthenia	flowers bright yellow
		very local, in patch of Juncus	
✓1	12	Aster	ray flowers purple, disk yellow turning red.
		very local, in patch of Juncus	
J1	13	Bidens f. frondosa	erect; disk flowers yellow.
		local in patches of Juncus	

43214		Agrostis		
✓1		rare, in patch of Juncus		creeping, rooting at nodes; flowers light yellow.
✓1	15	Ranunculus		petals yellow, plant tending to be reddish.
		rare, in patch of Juncus		
✓1	16	Hypericum sp. mutilum		flowers purplish.
		occasional in patch of Juncus		
✓1	17	Veronica		
		common		
		Aug. 31 – about 10 mi. north of Coquille		
3	18	Chamaecyparis lawsoniana		tree 20 m. tall, branches drooping & pendant.
		common in coniferous forest		
label written		Sept. 3 – Hayward, Alameda Co.	Calif.	
1	19	Amaranthus		prostrate
		common in hard day soil ~~ground~~ and full sun along street		
		Sept. 3 – summit ridge of Santa Cruz Mts.; Summit Road, 4 mile s.e. of Saratoga Gap.		
labels written (photos)		On dry roadside in chaparral with Pseudotsuga and Quercus kelloggii	2900'	Santa Clara – Santa Cruz County boundary
3	20	Haplopappus arborescens		aromatic shrub 1 m. tall; flowers yellow, rays none.
		occasional in road cuts		
3	21	Eremocarpus setigerus		
		locally common in full sun		
1	22	Acer macrophyllum		small tree, 6–8 m. tall
		common		
2	23	Zauschneria californica		large clumps; flowers scarlet.
		local		
1	24	Polygonum		stems ascending
		rare, in full sun		

1962 California

43725 Heterotheca
1 common in full sun

1 26 Corylus cornuta var. californica
occasional in edge of thicket

1 27 Madia
in open grassy place

3 28 Madia
common in open grassy flat place

1 29 Madia
in open grassy steep slope

1 30 Madia cf. madioides
on steep rocky bank

3 31 Holidays
common on roadsides
and other open places

small clumps, usually of a few erect stems;
flowers yellow
shrub 2 m. tall

rays yellow

plant stemy-smelling;
ray flowers yellow.
ray flowers yellow

rays yellow

erect, plant gray-green,
flowers yellow.

1962 California

Sept. 4 - flight from S.F. to Chicago in Boeing 707.

Low lying cloud layer over Bay area, extends inward past the first hills east of the Bay.

There are brown, with blackish forest in ravines and steep slopes.

Area north of Suisun Bay is of brown rolling hills with no trees except tiny planted clumps.

Sacramento Valley area a patchwork of green and brown cultivation but eastward large areas of brown rolling land with green cultivated valley bottom-lands along rivers.

e. of Sacramento

Foothills more and more wooded with sparse to locally dense wood, probably oak woodland. Flatter areas mostly grassy and light brown or cultivated. Thus sloping flat surface more and more dissected eastward and more completely wooded. Remnants of the old surface grassy but increasingly scarce

upward. Higher cleared areas showing conspicuous contour farming, some of them green at higher elevations.

Higher areas are light gray rounded n-s. ridges only very sparsely wooded, almost completely bare and almost white ~~east~~ west of Lake Tahoe. Immediate slopes around lake forested. Lake an intense blue except a few narrow shallow areas which are light green.

Forest belt east of lake dense but narrow, only on first several ridges.

Then everything is brown. Then a cloud ~~bank~~ layer.

Then Nevada Basin and range topography with bare brown mountains, rusty to white dry lakes, reservoirs, a few green bottom lands and cultivated areas. Area around Fallon cultivated, ~~and~~ a green and yellow patchwork.

Carson Sink a pale gray smooth extensive dry lake bed with a few darker gray patches and a tiny patch of low hills near east side, some sand dunes there and

1962 Nevada

a row of them along east side at foot of high range of mountains. Higher parts of these are rather sparsely wooded. Another smaller dry lake east of this range, and vast alluvial fans and washes. Mts. ranges east of this wooded on higher slopes, sparsely so and lower ranges only slightly. Some dry farming east of these in wide valleys, but only scattered enormous fields. A very few ~~so~~ smaller bright green fields.

Encroaching cloudiness. Mountains mostly too low to be more than brown and very sparsely if at all wooded. Vast alluvial fans, small dry lakes, very locally on fans much inexplicable road construction forming close network. Elsewhere only a very few roads. Mountains mostly with rounded, not too rough ridges. Locally some sharper erosion. This with scattered trees.

Cloudy.

Then rougher broad valleys with stream courses green, with some woody vegetation.

Elko Nev.

Then a very high very rough range, with sharp ridges, some wood, pale gray rocks, snow patches in sheltered high spots.

Much cloudiness.

Then a high range to south quite densely wooded at higher elevations. Then broad alluvial slope down to a very extensive almost white featureless area - Bonneville Salt Flats or Salt Lake Desert This is enormous. Some small patches and strips of dunes eastward. These varying in character and pattern. Some are partially fixed - but by what? Some small patches of darker bare, mountains like islands Then some obviously fixed tiny dunes.

Then a reddish alluvial slope and a range of mountain with vegetation on lower slopes, upper ridges bare.

Small outlying ridges in alluvial slope to east.

1962 Utah

Flew another wide desert valley but with flow pattern rather than a dry lake. Some green patches of cultivation to south.

Then a higher range of mountains, wooded in higher parts, & south broad alluvial slope, and a small area of cultivation patchwork at south end of Great Salt Lake, this lake bounded by salt flats and, in one place, evaporation basins.

Another mountain range and an extensive cultivated plain, with Salt Lake City.

Then extensive area of thinly wooded mountains possibly mostly chaparral-covered, but from 37000' this is hard to be sure of. This mountain system is very complex, with complicated drainage and ridge patterns.

A valley with bottom lands (salt?) and a reservoir perpendicular to course.

More complicated mts.

with widely spreading drainage basin draining westward into valley just mentioned. Quite extensive, irregularly vegetated, but thinly where relief is little, densely on higher areas. Cloudiness.

Desert drainage systems incised in broad alluvial slopes between low desert mountains, the drainage running eastward, but eventually entering a n.-s. river.

East of here low mountains, often more or less flat-topped, trending n.-s., fading gradually into almost a plain with low n.-s. scarps and flat topped ridges, and beyond rock-spring Wyoming only rather more relief. All desert, but with a conspicuous pattern of spots of vegetation.

Eastward this changes to low desert mountains. Densely wooded mountains rugged to south. Then locally plains, locally low mountains. Then

higher mts, locally
densely and extensively
wooded; especially
to south; much grass
& desert on more gentle
relief along course;
only patches of grass
to south; locally
closely imbricated
e-w strike ridges.
Then drainage to
n.e. over vast alluvial
slope, dissected into
low mesas near
mts. Low ridges
running east & n.e,
scattered ponds with
whitish (alkaline?) margins.
Country all brown,
treeless, sparsely
hilly in a complex
pattern; changing
to a plain with a few
rather sizeable lakes
(& reservoirs).
Then abruptly, a low
mountain range, and
east of it, a somewhat
dissected plateau and
more low mountains
interspersed with valleys
with a little relief.
Drainage east & north of east.
Hills lower and lower,
High plains, still cultivation, poor visibility.

Interfluves are low mesas
with simpler, incised
dendritic drainage pattern.
Large areas of cultivated land
on lower terrace.
Edges of mesas conspicuously
whitish.

East of Scotts Bluff a
great multitude of ponds
& reservoirs and some
dust areas in grassland.

1962 Virginia

Sept. 8 - near Williamsburg
headws. of Powhatan Cr.
Swamp with Acer rubrum and Nyssa sylvatica. Shallow wide ravines cut into the coastal plain, total relief perhaps 8-10 m. with many spring heads.
Rich herbaceous flora, many ferns, rich shrub layer.

Slopes with Liquidambar, Quercus primus, Pinus taeda, Acer rubrum, Q. velutina?, Fagus, etc. Some of pines and tulips are quite large.

Sept. 8 - headwaters of Powhatan Creek, near Williamsburg, in swamp

43232 Rudbeckia laciniata var. digitata
✓4 wet ground, dense shade

✓2 33 Elephantopus carolinianus
wet sandy roadside

✓2 34 Cyperus retrofractus (L.) Torr.
wet sandy roadside

✓1 35 Desmodium
wet ground, dense shade

gdt county from map James City Co.

rays yellow; disk greenish yellow

flowers lavender

loose clumps with single ascending culms.
erect

1962 Virginia - Ohio - Md.

Sept. 16 - Sleepy Hollow
Fairfax Co.
weedy vacant lot.

43236 Eupatorium
✓3 local, occasional

Sept. 22 Dysart Woods,
label with 2 mi. w. Centerville
Belmont Co. Ohio

✓1 37 Galium
occasional in shade of tall mixed hardwood forest

Sept. 30 - Arnold, just north of annapolis, anne arundel Co.
in mixed second-growth hardwood forest, mostly Liriodendron.

✓2 38 Asplenium platyneuron (L.) Oakes
very local, on earth bank

✓1 39 Botrychium dissectum
on low flat ground

✓4'2+2 40 Myrica cerifera
common in edges, along roadside

✓1 41 Botrychium virginianum
rare on low flat ground

✓5'3+2 42
local on roadside

slightly precarious because of rhizomatous habit; erect; heads white.

branching at base.

population sample, all plants seen.
shrub 2 m. tall, fruit lead-gray.

prostrate twining vine, stems several m. long; fruit terete.

Cathedral State Park

124 acres

hemlock (av 2' girth)
red maple
white ash
yellow birch
sugar maple
black cherry

seven acres on west side (2350 lineal ft.) on gentle n. slope - bordered on west by meadow. Border of thick small growth of hemlock red oak, red maple, beech, yellow birch, tulip

thick undergrowth of small trees grows in about 50' on me Then first large hemlock and undergrowth immediately opens up but with scattered suppressed trees - large trees well spaced but canopy fairly complete

Ground cover of patches of Dryopteris spinulosa, Dennstaedtia, Lycopodium, Luzula, Tilia, Mitchella,

Large trees
hemlock dominant
red maple
black cherry

a large red maple with conspicuously twisted trunk.

Cherry 3' dbh

fallen chestnut.

Several small areas of wind damage. Hemlocks have been broken and windthrown. Thick growth coming up here.

1967 Ohio

Sept. 22 - Dysart Woods

broad ravine with old mixed hardwood forest - fairly open beneath, canopy essentially complete trees to 30-35 m. tall, varying in size to ~~2.5~~ 1.8 m. I dbh. mostly much smaller, down to 10-15 cm. for canopy trees, a few smaller suppressed ones.

Many seedlings & saplings up to 2 m. tall. almost no herb layer

Quercus alba
Acer nigrum var. glaucum
Fagus grandifolia
Acer rubrum
Nyssa sylvatica
Prunus serotina
Fraxinus americana
Liriodendron
Ulmus sp.

Some beeches have small branches along trunks.

Osmunda with numerous tubercles 1-2 cm wide, 1 cm high on bank, emarged

Herbs
Botrychium virginianum
Sedum ternatum
Epifagus
a Aster macrophyllum
Aster sp.
Prenanthes trifoliata?
Solidago caesia
Polygonatum pubescens
Galium triflorum
Galium lanceolatum

Cornus florida
Rhus toxicodendron
Parthenocissus

Sept. 29 - Smithland Bog

Access difficult - the old way all built up. Coming from the back the steep slopes are covered by dense Kalmia and Smilax, hard to penetrate.

Sept. 30 - Falls Church area - trees are just beginning to change color - red maples are, some of them, beginning to show red at ends of branches. Platanus somewhat brownish or yellowish. Nyssa, Cornus, Prunus serotina have turned or are turning red. Most Liquidambar still green. Liriodendron in driest situations show some yellow.

Sept. 30 - Head of Broad Creek, Anne Arundel Co. Md.

Nyssa in full color, abundant around shore at head of creek. Father O'Neill says that in normal years the leaves would be gone by now.

Crabs abundant in 2-3' water, esp. on sand or silt bottom. about 50 males & 1 female.

One blue heron, several gulls.

Sept. 30 - Arnold, north of Annapolis.

Second growth hardwood, very ragged and irregular, with scattered pines.

The prominent understory of Cornus is turning red. Nyssa almost completely turned. Liquidambar beginning to turn purple. some quite purple. Sassafras beginning to turn red. Tulip with some yellow leaves, some trees almost yellow. Platanus brownish green. Red maple beginning to turn. Carpinus beginning to turn.

The interesting thing is that almost all species vary so much in how far they have changed color from tree to tree.

This woods largely Liriodendron. On very low rolling hills and flat low ground.

Soil brown sandy loam with some fine gravel and iron concretions.

Botrychium on low flat ground.

Much honeysuckle locally. Still flowering slightly.

Oct. 7, Rattlesnake Point Overlook
Mixed deciduous forest
Fraxinus, Carya, Ostrya
Quercus rubra, Prunus, etc.
Juglans nigra, Robinia? tilia
Shrub layer of Hamamelis,
Crataegus, (edges).

Hammamelis flowering
abundantly, clematis
virginiana fruiting.

Fraxinus, Carya, Prunus
serotina well colored.

Quercus rubra, Robinia.
Tilia turning.

Oct. 7 - Rattlesnake Point Overlook,
Skyline Drive (Northern Section)

43243 Crataegus chrysocarpa Ashe — tree-like shrub 3 m. tall,
✓ 3 local on talus below road — fruit bright red, fleshy,
greenstone — rather tart.

Oct. 10 - Washington, D.C.

✓ 44 Crataegus — small tree 3 m. tall;
planted around park — fruit scarlet.

19 200

Mr. Hugh Mathison
owns
Castello Hammock
Homestead

15 local species of ferns.
should also try to get
"Lincoln Hammock" next
to Castello.

Two together furnish
most interesting hammock
in Fla.
Mathison interested in
conservation. but afraid
people of are taking advantage.