

CHAPTER 18

ECOLOGICAL SUCCESSION AND OUR DISTURBED GROUND COMMUNITIES

18. 1. INTRODUCTION

Earlier, in Chapter Nine, we introduced the important biological discovery of ecological succession. You may recall our two given examples; a pond and a neglected grassy lawn.

18. 1. 1. Ponds and Lakes

As mentioned, eventually all lakes and ponds become filled in with upland sediments. First they become reed-strewn marshes, and afterwards, dry land. In the end a forest grows on the same spot. This, of course, assumes they are not urbanized first.

All of our current lakes may eventually become forest lands. In the meantime they serve as important wetland habitats.

Saipan's Lake Susupe might eventually host a coastal forest. So might Tinian's Lake Hagoi. The Tinian Magpo Swamp might host an inland forest.

The marshlands around Lake Susupe and the wetlands of Chalan Kiya, Tanapag, and San Roque originally developed from land-locked segments of the Saipan Lagoon. (See our Chapter Twenty on wetlands, especially the section on hydric succession for an extended discussion on this topic.)

18. 1. 2. Neglected Lawns

Like lakes, lawns are also in the middle of a state of change. Grassy lawns are developed and kept grassy by constant mowing. Neglected lawns soon host invading weedy shrubs. If neglected, over time the once human-controlled habitat changes and grows into a forest.

Mowing serves the same function as grazing ungulates (sheep, cows, horses, antelope, etc.) on meadows and grasslands. Grass shoots are unusual in that they grow from their base — other shrubs and trees grow from their tips. This allows for grasses to withstand regular top pruning by mowers or grazing animals.

Mowing and grazing keep down the shrubs and tree seedlings. Unlike grasses, these other plant types do not tolerate the constant top clipping.



Saipan's Lake Susupe might eventually host a coastal forest.



Humans are regular agents of habitat disturbance. Heavy equipment is one of our most common tools.



Members of the sunflower plant family Asteraceae have seeds with silky, parachute-like bristles or plumes that allow them to be dispersed long distances by the wind.

18. 1. 3. Natural and Human-induced Successional Agents

Some events can trigger what is essentially a series of habitat changes. The sum of the stages in a series is called a **succession**.

Typhoons knock down forest trees. Fires clear out patches of forests. Even our volcanoes serve as natural agents of deforestation and change.

Humans are regular agents of habitat disturbance. Fire and bulldozers are our two most common tools. Here in the Marianas, temporary farmland clearings are also common.

Disturbed areas are usually in ‘open sun’. If left alone, in time these disturbed lands redevelop their original forest canopies. How and why does this happen? First let us look more carefully at the qualities of “weedy” pioneers. These are the first plants to arrive to a bare or disturbed area.

Pioneer plant species are adapted to travel and “pioneer” new locations. Seeds are outfitted with feathery wings, fur-catching structures, or airborne allowing parachute silk.

Human clothes, socks especially, are just as effective as animal fur in catching such adapted seeds. A visit to most weed-strewn disturbed areas results in a person coming home with many such “hitchhikers”.

Many of our island’s pioneer species are introduced and problematic ‘invasive species’.

18. 2. COMMON CHARACTERISTICS OF WEEDY, INVASIVE SPECIES

A species that invades new areas, only to eventually get crowded out, is called a **pioneer species**. A species that inhabits an area over the long term is called a **climax species**. The two strategy types actually work in somewhat of an ‘ecological feedback’ manner.

Together the two strategies operate to rehabilitate our disturbed lands. After a disturbance, the land area eventually grows back with its long term vegetation cover. This occurs in a relatively short period of time.

Plants applying the pioneer strategy serve to save what soil remains in an area after a disturbance. Later on these are displaced by overgrowing climax species.

18. 2. 1. Better Use of Water and Minerals

There are a number of characteristics that make pioneer species so successful. In general, the successful pioneers are more efficient in their use of water and minerals. They simply out-compete native species.

18. 2. 2. Production of Numerous Seeds

Disturbed ground plants often produce a large quantity of seeds. This gives them a competitive advantage in reproduction. By producing a lot of seeds, this enables weedy plants to simply over-

whelm native species or crop plants by sheer numbers. Also, with the greater number of seeds, they are more likely to spread to new areas.

18. 2. 3. Dispersability

Dispersability refers to the ability of a plant to get to new areas. Most of the successful invaders have seeds that are easily dispersed. Those with a poor means of dispersal are slower to spread.

Some of these invaders, particularly members of the sunflower plant *Family Asteraceae*, have seeds with silky, parachute-like bristles or plumes that allow them to be dispersed long distances by the wind. An example of this is our local MASIJSIK, *Chromolaena odorata*.

Some of the fastest spreading species have fruits or seeds that bear a bristle or “**awn**”, like *Bidens alba*, beggar’s tick. Others make seeds that are spiny or barbed, like *Cenchrus echinatus*, sandbur. These fruits and seeds stick to clothing, feathers, or fur. Later they are picked off or just fall to the ground on their own and thereby get dispersed.

Another common means species use to spread their seeds is by making a sweet, fleshy, attractively colored fruit containing very hard seeds. The fruits attract birds and fruit bats. When eaten, the seeds pass unharmed through these animals’ digestive tracts.

Other easily dispersed species have sticky seeds that adhere to the outside of birds, animals, or humans. Some move to new areas on the mud stuck to shoes or to heavy construction or farm equipment.

18. 2. 4. Lack of Biological Controls

In their native habitat, weedy invasive species are often kept under control by that region’s insects and plant diseases. However, when they are dispersed to our Pacific islands and elsewhere, these controlling agents are left far behind.

This lack of a biological control makes the invaders more aggressive and more successful in their new island home.

18. 3. MORE ON REPRODUCTIVE STRATEGIES

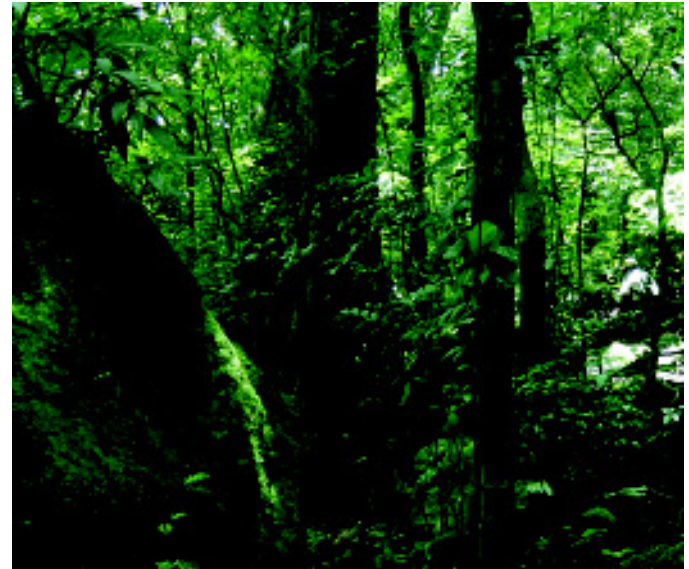
18. 3. 1. Comparative Strategies

Scientists have learned that many plant and animal species are particularly adapted with certain “reproductive strategies”. There are two common strategies.

One is to favor a long term, sustained existence within one community, such as most trees growing in a forest. Plants and animals with this strategy tend to have long lives, have relatively few offspring, and tend to nurture them in some fashion.

The other strategy is to lead a lifestyle of taking advantage of short term ecological conditions. These short term conditions result from disturbance events.

These disturbances create short-lived habitats such as herb-rich “meadow-type” areas, often established after subsistence farmers temporarily clear patches of land.



One reproductive strategy is to favor a long term, sustained existence within one community, such as most trees growing in a forest.



The other strategy is to lead a lifestyle of taking advantage of short-lived habitats such as herb-rich “meadow-type” areas.

Plants and animals applying this strategy usually live for just a brief time. They have numerous offspring and do not provide any nurturing care to them. Most insects are animal examples of this species survival approach.

18. 3. 2. Pioneer Species Strategies

As mentioned above, another adaptation is for seeds to be produced in great abundance. Many of them are also produced in relatively small sizes and they reach maturity in very short periods. Ecologists refer to such species as having a high *reproductive potential*.

This is done because most land areas are in a climax stage (meaning little change in habitat characteristics from year to year). Relatively few areas get disturbed each year.

Interestingly however, several ecosystems in the CNMI (our coral reefs, our forests, and our urbanized areas) are different from the usual in that they are often disturbed, this mostly due to our frequent typhoons and rapid urbanization.

Pioneer plants must be able to produce enough seeds to allow for a great deal of seed loss should they land on unsuitable sites. Local “unsuitable places” include the Pacific Ocean and the Philippine Sea. Once a suitable disturbed site is found, such plants must grow and mature quickly, establishing a foothold before other pioneer species find the spot.

Like the pioneer weed species, viruses, bacteria, protists and the above-mentioned insects all have extremely high reproductive potentials. If these are placed into a suitable environment, their population numbers can grow at incredibly fast rates.

Most pioneer organisms do not make it to maturity. The *survival ratio* in some cases is less than one in a million. A few always do reach maturity, however, and reproduce. These few are enough to assure survival of their species due to their high reproductive potentials.

18. 3. 3. Introduction of Weed Species

Many of our weed species were unintentionally introduced by people. Often construction equipment, moved to island areas, introduce many weedy seeds caught up in the dried mud stuck to the equipment.

Some weeds, like the *Lantana*, the scarlet gourd, and the MASIKSIK, can pose severe land use problems to agriculture and other land resource uses. Others, like the sand burr and the beggar’s tick, are only bothersome nuisances. (See plant descriptions below).

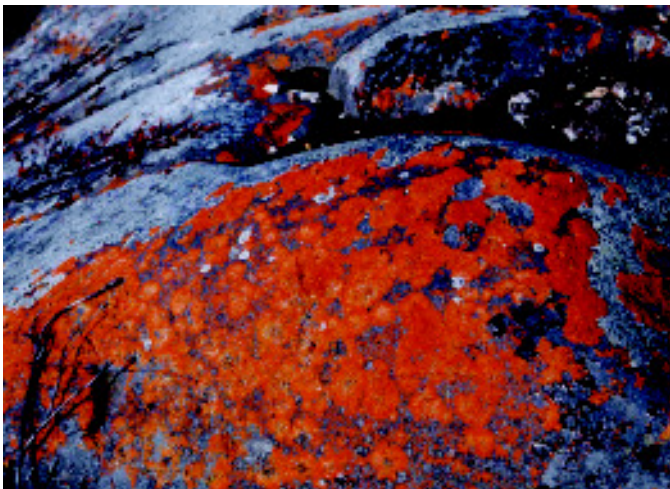
18. 3. 4. Fire and Grazing Disturbances

In certain ecosystems, disturbance is necessary for the continuance of the ecosystem. For example, some types of forest trees, in other areas of the world, require a brief fire to break open their seed coats.

As discussed in our savanna chapter (Ch. 22), it is likely that fires perpetuate some of our savanna lands. Without fires much of our savanna areas might revert back to native forest.



Most land areas are in a climax stage, meaning little change in habitat characteristics from year to year.



Pioneer plants such as this lichen, are among the first to become established in a disturbed area.

Grazing is a disturbance that keeps out many shrubs and tree species. Grazing animals trample tree and shrub seedlings and eat the growth points off at the branch ends.

Grasses are adapted both to trampling and to top grazing. As mentioned, grass stems grow from these plant's base while most plants grow from their tips.

18. 3. 5. Climax Species Strategies

Then there are the *climax species*. These need only have a couple of successful reproductive recruits over a long period. Their only need is to replace those lost to old age.

Coconut trees are good examples. It takes a long time to develop each seed. The seeds are rather large and usually fall close to the parent. In dense coconut forests, only when an older nearby tree dies and falls does a new coconut seedling have room to grow up and to spread its roots and claim its canopy space.

Another local climax species example is our *Ficus prolixa* tree, or the NUNU. To reproduce, its figs must first be fertilized by a specialized insect and ripened. These ripened fruits must then be eaten by a fruit dove or fruit bat. The seed-rich figs then pass through these animal's internal organs.

The birds' and bats' stomach acids wear down the fig seeds' outer covering. The seeds are defecated onto the branch of another forest tree. There it grows in its usual "strangling manner" to over-shade that tree and claim its place in our forests. Read more about the *Ficus* tree in our forest chapter (Ch. 19).

In the animal world, some fish, most reptiles, and almost all birds and mammals are adapted to climax conditions. This does not mean that climax species are not ready to establish new territories. They are. It is only that the number of offspring per individual is controlled by such mechanisms as placental nourishment, long rearing behavior, or some other mechanism which ensures that at least some of the offspring will survive. Each has been given certain advantages to reach adulthood.

18. 4. SUCCESSION SEQUENCES

18. 4. 1. Introduction

In further discussion of succession sequences, let us recall what causes a disturbance of biological communities. Typhoons are common. So are human encroachments into forests or grasslands. Fires, disease, pests, urbanization—each begins the process of biological succession anew.

We will use an old abandoned road or runway with many cracks for our example. It is amazing how such cracks in pavement are pioneered, then inhabited.

Succession begins with the first species' arrival. When other species arrive, competition occurs. Vines are great competitors in newly disturbed areas, as are grasses. Mosses and ferns are well adapted to conditions of sparse, moist soil. Lichens are the best adapted of all, able to invade bare rock and pavement.



Some weeds, like the Lantana, can pose severe land use problems to agriculture and other land resource uses.



The *Ficus* tree is an excellent example of a climax species which has evolved a specific reproductive strategy.

With the lichens' arrival on bare earth, the process of soil building begins. With only a little soil, ferns and mosses can get a foothold. With more soil buildup, the herbs, especially the grasses, thrive.

The grasses and other herbs soon cover all of the disturbed areas. Arriving shrub and vine seeds then sprout. These seedlings, if not kept down by mowing or grazing, grow their plants upwards, above the grasses.

Most grasses and other herbs need full sun. The grasses soon become shaded by the arriving shrubs and vines. Both grasses and herbs soon die back.

Tree seeds arrive, sprout and soon grow to an extent that they shade out the shrubs. Some vines may hang on but most grow only on the forests' edge. Only a few vines are adapted to living under the forest shade. These are the **lianas**. (See the discussion of lianas in Ch. 19).

There we have it. The succession sequence of a bare rock pavement to a forest.

Other ecosystems, such as coral reefs and wetlands, have different groups of successional species. We discuss wetland succession in detail in our wetland chapter (Ch. 20). The interested reader is encouraged to read Dr. Charles Birkeland's(ed.) book "*Life and Death of Coral Reefs*" to learn more about succession on a coral reef.

18. 5. DISTURBED GROUND PLANTS

18. 5. 1. *Bidens alba*

Bidens is in the plant *Family Asteraceae*. It grows as an erect, annual herb. *Bidens* grows from 20 to 90 centimeters high. It is sometimes referred to as a "daisy". Each "daisy" is actually a composite of many small flowers, both yellow and white.

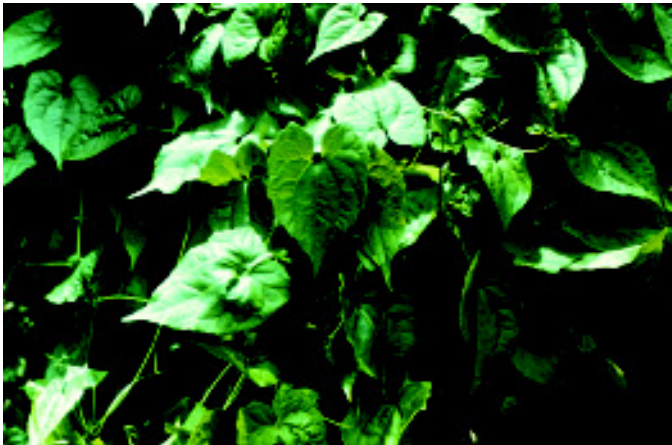
The petals of the "disk flowers" are creamy yellow and the outer or "ray flowers" are white.

It's English common name is "beggar's tick" because of the way its seeds catch onto people. These seeds are black, about 6 to 12 millimeters long and have 2-3 barbed "awns" at the tip. The seed has hooks (the awns) and easily sticks to animal fur and human clothing.

Bidens is native to tropical America. It is common throughout the tropical and subtropical world. Here it grows as a dominant plant along our roadsides and in recently cleared areas.

In Hawaii and the South Pacific, *Bidens* is well-known as a medicinal plant. The leaves and flower buds are brewed into a tea. This is consumed as a "blood purifier" and for treating throat and stomach ailments. The making of such teas is said to have been introduced by the Chinese.

In Tonga, a preparation of *Bidens* is reportedly used to treat itchy, oozing, or red eyes, such as "pink eye". On the Cook Islands, the



Vines are great competitors in newly disturbed areas.



Bidens, Family *Asteraceae*, grows as an erect, annual herb. It is sometimes referred to as a "daisy". Each "daisy" is actually a composite of many small flowers, both yellow and white.

sap of chewed leaves is also applied to cuts. In Mexico, the leaves are also brewed as a medicinal tea.

18. 5. 2. *Stachytarpheta jamaicensis*

These are herbs or “subshrubs” about .5 to 1.2 meters tall. They commonly grow in weedy areas. This species is particularly common in dry, disturbed areas.

Its plant family name is *Verbenaceae*. *Stachytarpheta* grows to a height of about 1 meter.

In English it is called “false verbena”. In Chamorro it is known as LASO’ KATU. This name suggests the flower’s resemblance to an erect cat tail.

These plants have pale to dark green, flat leaves and pale to deep blue flowers. The leaf edges are *serrate*, meaning saw-tooth shaped.

The flowers are a striking feature of this plant. They bloom just two or three at a time on long spikes.

There are actually more than one species of *Stachytarpheta* growing on our islands. One always has a pale flower with pale green leaves, the other has the more deeply colored flower with the darker green leaves. Sometimes *Stachytarpheta* flowers are pure white.

There are also hybrids between the two that show a medium color of both leaves and flowers. Interestingly, the hybrids grow to a larger size than either of the two parents.

These plants can grow on both limestone and volcanic soils that have recently been cleared of vegetation. In the days before World War II, they were often used as a broom. They are sometimes referred to as medicinal plants.

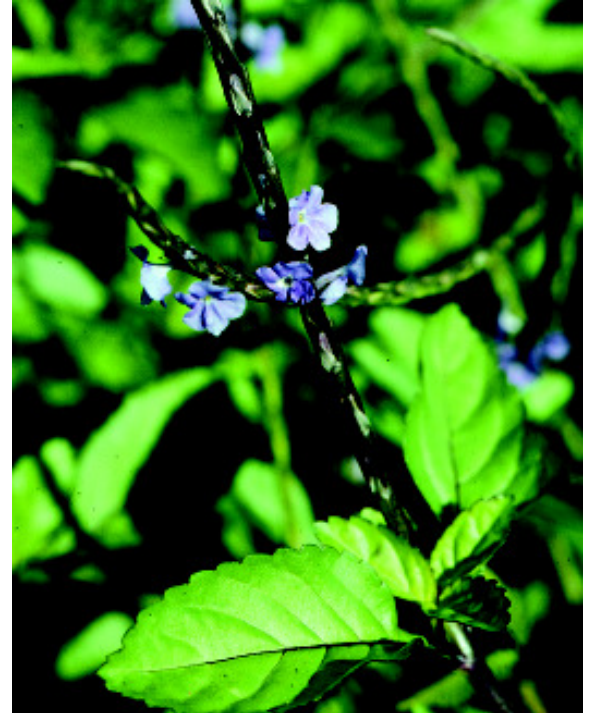
18. 5. 3. *Chamaesyce hirta*

An earlier genus name for this plant was “*Euphorbia*”. This is a large genus with different species growing throughout the world. They have a wide variety of growth patterns and characteristics. Many resemble cactuses and have thorns. Others are like the popular “Christmas” poinsettia, with reddish and green leaves.

Chamaesyce hirta is called GOLONDRINA in Chamorro. In Carolinian it is KOLONGGORINA. In English it is called “garden spurge”. It is in the plant *Family Euphorbiaceae*. This herb grows as an annual. It has a low-sprawling growth form. Its rounded flower bunches are *axillary*, meaning they grow at the axils, right next to the stem and between the leaves.

Its opposite leaves are usually green though sometimes they are purplish-green above and light green below. They are serrate (saw-tooth shaped). The stems are “pubescent”, meaning they are somewhat ‘hairy’. Its flower clusters resemble small round bushes.

Like many “euphorbs”, garden spurge has a milky sap. *Chamaesyce* grows commonly in waste areas, pastures, roadsides, and among the grasses and other herbs of our lawns. The whole plant is reportedly used as an ingredient in the medicinal preparations of



Stachytarpheta grows to a height of about 1 meter and its name suggests the flower’s resemblance to an erect cat tail.



Chamaesyce hirta, Family *Euphorbiaceae*, has a low-sprawling growth form and rounded flower bunches which are axillary, meaning they grow at the axile, right next to the stem and between the leaves.



Passiflora foetida, Family Passifloraceae, grows next to forest edges, in pastures, and in disturbed areas. Its distribution is pantropical. Its purple and white flowers are about one and one half inches wide, with large lacy “bracts” that cover the buds and the fruit.



Momordica charantia is our “wild bitter melon”. These grow as a herbaceous vine, often at our forest edges. It also is locally common, climbing over disturbed low vegetation, in places such as thickets and fallow land.



Mimosa pudica is our interesting “sleeping grass” or “sensitive plant”. It is a member of the pea plant family, Fabaceae. It grows well in grassy areas, subject to “some” mowing. It can be a serious pest because of its prickles, which hamper hand-weeding.

Chamorro surahanus. It is also used as a medicine after giving birth in the Carolinian culture.

18. 5. 4. *Passiflora foetida*

The English common name for the *Passiflora foetida* is “Love-In-A-Mist” or wild passionflower. In Chamorro it is DUTSE. In Carolinian it is DOSSI. This is a member of the passionflower plants, Family Passifloraceae.

This vine grows next to forest edges, in pastures, and in disturbed areas. Its distribution is pantropical.

Its purple and white flowers are very unusual. They are about one and one half inches wide, with large lacy “bracts” that cover the buds and the fruit (bracts are modified leaves usually near the flowers).

The trivial epithet name “foetida” means bad smelling. These plant’s flowers produce a foul smell that discourages herbivores from feeding on them.

The smooth, edible, red and yellow fruits are about three centimeters in diameter. After pollination, the fruits mature in about one month. The leaves are noticeably 3-lobed. Each has a tendril growing out of the leaf axil.

There are many varieties of cultivated passionflowers. These are commonly grown on a commercial basis in Hawaii.

18. 5. 5. *Momordica charantia*

Momordica charantia is our “wild bitter melon”. In Chamorro it is called ATMAGOSU. In Carolinian it is ATMAGOSO. These grow as a herbaceous vine, often at our forest edges. It is locally common, climbing over disturbed low vegetation in places such as thickets and fallow land.

Momordica is recognized by its “**palmately**” compound leaves. Such leaves are shaped somewhat like the human palm with outspread fingers. Its viny stems have coiled tendrils that grasp onto other plant’s branches.

It can also be identified by its yellow, 5-petaled flowers and its orange, spindle-shaped fruits. These fruits split open to expose the red pulp and large brown seeds. A cultivated variety of the bitter melon (*Momordica charantia*) is also grown commercially.

In Malaysia *Momordica* is used medicinally for skin diseases, headaches, and as a purgative.

One problem with our wild bitter melon is that it also serves as a host to the plant insect pest, the melon fly. (See Chapter 31). Even if farmers “control” melon flies on their own crops, our wild bitter melons’ populations can serve as a host for new introductions.

This is why an effort was once undertaken towards “eradicating” the flies altogether using the “sterile male technique”. That effort fell through due to a lack of adequate funding. Perhaps this project can still be funded and carried out in the not-too-distant future.

18. 5. 6. *Mimosa pudica*

Mimosa pudica is our interesting “sleeping grass” or “sensitive plant”. It is a member of the pea plant family, *Fabaceae*. It can be common to locally abundant in disturbed, sunny places. It grows well in grassy areas, subject to “some” mowing. It can be a serious pest because of its prickles, which hamper hand-weeding. It often escapes below mower blades due to its low to the ground, “prostrate”, growth habit.

Mimosa pudica has pink flowers, growing to a size of about 1 centimeter. Their flat, oblong, segmented pods have bristly margins. These herbs have reddish, prickly stems, and compound leaves.

The leaves are very curious in that they close up upon being jarred. When touched, an “osmotic-triggering mechanism” causes a rapid moisture loss from each leaf.

A related species, *Mimosa invisa* is even more troublesome. It grows much larger and is similar to the *Lantana* (see below) in terms of being a shrubby, thorny pest.

One good thing about these two species is that they are legumes. This means that they help to fix nitrogen into the soil. This is done through their symbiotic association with *Rhizobium* bacteria. The bacteria is concentrated into nodules growing on these plants’ roots. This bacteria absorbs atmospheric nitrogen and “fixes” it into the soil, making it available to the plants.

18. 5. 7. *Abrus precatorius*

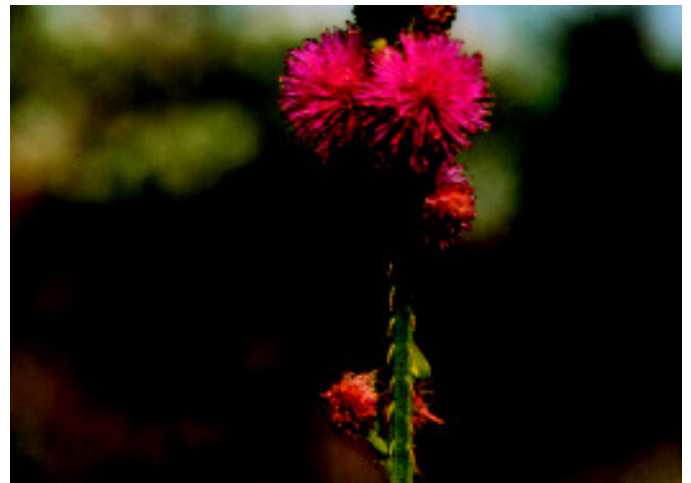
This viny plant is native to Southern Asia. It likes hot sunny areas. Here in the southernmost Marianas, it inhabits disturbed forest communities. There it grows as a perennial, climbing over other plants up to 5 meters in height.

In Chamorro this plant is called KULALES HALOM TANO’. Its English common name is the Prayerbead vine. This name refers to past traditions when the seeds were strung as beads on a rosary chain. This is now strongly discouraged due the poisonous nature of the seeds and the danger to young children consuming them by accident. The seeds are sufficiently poisonous that their sale in jewelry is banned by US federal law.

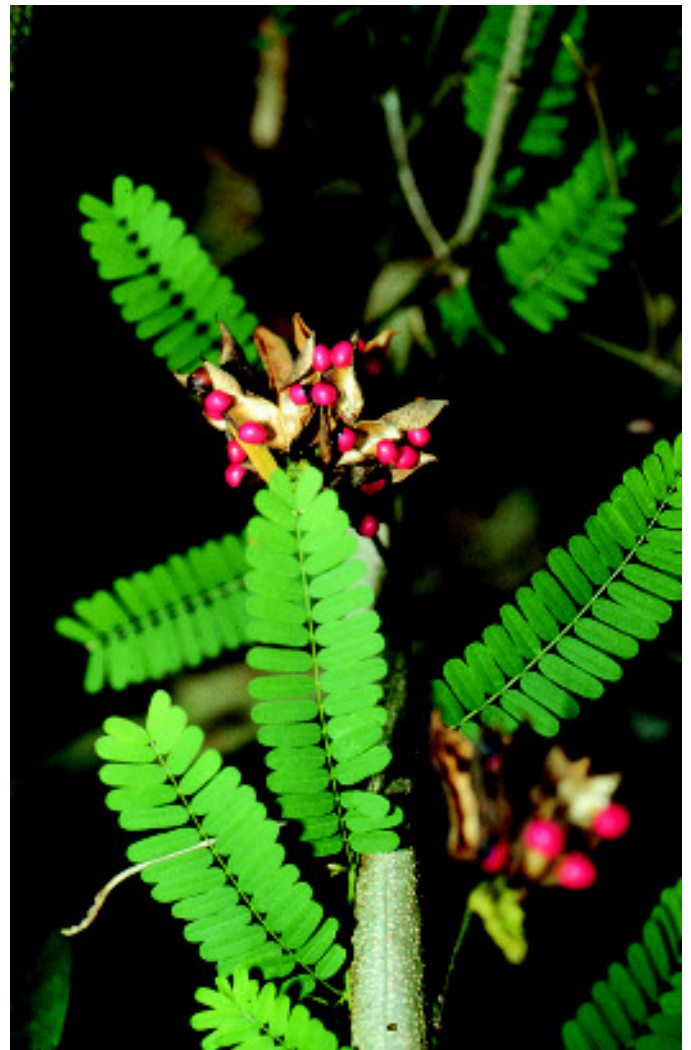
The flowers look like tiny, white or lavender sweet peas. The green pods grow in clusters. These ripen to black or dark brown. They curl as they open, revealing four to eight brightly colored seeds which are 1 centimeter (0.4 inches) long. Their coloration is 1/3 black and 2/3 scarlet red. These seeds are so uniform in size and weight that they have been used in India to measure the weights of jewelry and precious metals.

Concentrated in the seed coats is the phytotoxin, “abrin”. Phyto = plant and toxin = poison. With a human lethal oral dose of 1.5 milligrams per kilogram of body weight, the seeds are so toxic that one thoroughly chewed and swallowed might kill an adult. Age does not weaken the toxin, so even old seeds are poisonous.

Absorbed through a cut or sore it is several hundred times more toxic. People have been seriously poisoned merely by pricking a finger while stringing the seeds into necklaces.



A related species, *Mimosa invisa* is even more troublesome. It grows much larger and is similar to the *Lantana* in terms of being a shrubby, thorny pest.



Abrus precatorius is native to Southern Asia. It likes hot sunny areas. Here in the southernmost Marianas, it inhabits disturbed forest communities where it grows as a perennial, climbing over other plants up to 5 meters in height.



Lantana originated in either tropical and subtropical America or in the West Indies. It was brought to many areas intentionally as an ornamental plant, but often escaped to become a weedy pest plant.



Cenchrus, Family Poaceae, is native to tropical America, but is now widespread in tropical regions. It is considered a very bothersome pest because of its sharp-spined burr that readily adheres to clothing and animal fur.

If eaten, symptoms do not usually appear for one or two days. The first symptoms are likely to be irritation of the mouth and throat, followed by severe vomiting and diarrhea, often with bleeding. Later the person has poor coordination, difficulty in breathing and paralysis. Death is by respiratory failure.

If you suspect a person has eaten the seeds, first aid treatment calls for inducing vomiting, even if no symptoms have yet occurred. Take the patient to a physician immediately.

18. 5. 8. *Lantana camara*

Lantana originated in either tropical and subtropical America or in the West Indies. It was brought to many areas intentionally as an ornamental plant. It often escaped to become a weedy pest plant. *Lantana* is often found in pastures and roadsides. It is tolerant of salt spray and can grow near coastal shore edges.

Lantana can be a serious pest because of its prickles, poisonous foliage, and habit of forming thickets.

It grows as a bush with sprawling, viny, square stemmed branches. It has tiny sharp thorns on its stems. *Lantana* has very aromatic, some say “bad-smelling”, leaves that may be smelled some distance away. The bushes usually grow to a height of three feet, but they can grow taller than six feet in some areas.

The beautiful flowers grow in small heads. On wild varieties, each flower head’s older flowers and outermost flowers are pink and the central, younger ones are yellow and orange.

When the flowers first bloom they are yellow. Over a 24 hour period, they gradually change color to orange, then to red. They remain on the “inflorescence” for about three days. An inflorescence is a grouping of smaller flowers which appears as one flower.

The color pattern creates a “bull’s eye” display with yellow flowers at the center surrounded by successive whorls of orange, then red, flowers. Flowering usually continues throughout the year.

Cultivated *Lantana* varieties have flowers of many colors, from yellow, through orange and red, to pink and lavender. Cultivated varieties are often thornless. The poisonous berries are tiny and blue-black.

Lantana is a poisonous plant. If eaten it damages the liver. Actually *Lantana* is only moderately toxic, but it is dangerous because its berries are reportedly so delicious that a person eating any at all will likely eat toxic quantities. The unfortunate thing about *Lantana* is that such liver damage is largely irreversible.

Symptoms of *Lantana* poisoning includes severe vomiting and diarrhea, muscular weakness and circulatory collapse. First aid involves inducing vomiting and taking the patient to a physician. Interestingly, in Tonga, *Lantana* is reported to have medicinal uses. The leaves are crushed and the juice dripped onto fresh cuts to stop the bleeding. It is also used as an antiseptic in Malaysia and in the Philippines.

The sprawling, thorny nature of the plant makes it a severe agricultural pest in many areas of the world.

Recently there have been several reports by Pacific region agronomists of successful biological controls against wild *Lantana*.

18. 5. 9. *Cenchrus echinatus*

Cenchrus is in the plant *Family Poaceae*, the grass family. This is a common sandbur grass. *Cenchrus* is native to tropical America, but is now widespread in tropical regions. In all areas it is considered a very bothersome pest. This is because of its sharp-spined burr that readily adheres to clothing and animal fur.

Cenchrus grows as an annual. It is common on our sandy beach areas. Each plant produces between 5 and 15 fairly large burs. Sandbur grows to a height of up to 1 meter.

18. 5. 10. *Capsicum frutescens*

This common shrub is our wild red chili pepper. *Capsicum* is in the plant *Family Solanaceae*. In Chamorro it is called DONNI SALII. In Carolinian it is MWIIGH. The flowers are greenish white. The chili pepper fruit is 2-3 centimeters long, deep red in color, and has a very pungent taste.

Capsicum is native to tropical America. Here it escaped from local cultivation, probably during the Spanish period. Its local name “salii” refers to our indigenous bird, the Micronesian starling. Most likely it and other fruit-eating birds and rodents help disperse these plant’s seeds.

The *Capsicum* fruit contains a powerful local stimulant known as “capsicin”. When applied to the skin it produces a sensation of warmth without reddening. Taken internally it produces a sensation of “warmth” in the mouth, esophagus, and stomach. The piquant tasting leaf is used in several cultural medicines. Rubbed and chewed leaves are applied to boils, abscesses, and wounds.

18. 5. 11. *Hippobroma longiflora*

This weedy plant is commonly known in English as the “Star of Bethlehem”. Its trivial epithet name, longiflora means “long flower”. It is a member of the plant *Family Lobeliaceae*.

Hippobroma is native to tropical America. It is a low growing herb with narrow, dark green leaves. These have irregular edges with lobes and leaf tips coming to points, but there are no thorns.

The flowers grow singly, and are intensely white, contrasting with the dark green of the leaves. Each flower has a long narrow tube up to three inches long. The tube ends abruptly with five petal lobes, each about one centimeter long.

Hippobroma produces an abundance of poisonous milky sap. All parts of the plant are toxic. Do not touch it as the poisons can be absorbed through bare skin. Small amounts of the sap, placed into the eye by rubbing them after handling the plant, can cause blindness.

In larger doses the poisons cause vomiting, paralysis of the voluntary muscles, rapid and feeble heartbeat and irregular respiration.



The chili pepper fruit contains a powerful local stimulant known as “capsicin”. When applied to the skin it produces a sensation of warmth without reddening.



Hippobroma longiflora, *Family Lobeliaceae*, is native to tropical America and is a low growing herb with narrow, dark green leaves. These have irregular edges with lobes and leaf tips coming to points, but there are no thorns.

Cattle have been killed by eating these plants. Always use tools to eradicate it; do not pull them up by hand.

First aid treatment: If you get the sap onto your skin or into your eyes, mouth or a cut, wash thoroughly with cold water for a least five minutes. With eye contact, see a physician without delay. If taken internally, induce vomiting immediately and take the person to a physician. Speed is essential.



Chromolaena grows in thickets, pastures, scrub forests, and other disturbed places.

18. 5. 12. *Chromolaena odoratum*

In Chamorro this plant is called MASIKSİK. Several other local plants are also referred to as MASIKSİK. In Chamorro MASIKSİK means ‘weed’. These plants are in the plant Family *Asteraceae*. An older genus name for this plant was *Eupatorium*.

This is a large branching, rambling shrub. It has opposite, ‘hairy’ leaves. The leaves are conspicuously three veined from the base. They are somewhat strong-smelling and are toothed along their margins. The flowering heads are purplish or white and occur in flat-topped clusters.

Chromolaena grows in thickets, pastures, scrub forests, and other disturbed places. Cattle ranchers are well aware of the unpalatable nature of this form of MASIKSİK. ‘Unpalatable’ means not able to be eaten and digested. It quickly takes over large areas of pastureland. It can be controlled by good grazing management programs.

18. 5. 13. *Coccinia grandis* (The Scarlet Gourd)

Coccinia is in the *Cucurbitaceae* plant family. Its common name, “the scarlet gourd” refers to its brilliant red fruits. It is native to Africa.

It has showy, white 5-petaled flowers. Its fruits are smooth and oval-shaped. Like other vines, it has tendrils which grasp onto other plants’ branches.

Although *Coccinia* is only a recently introduced pest species, it already inhabits many areas of Saipan. It is a pest because of its ability to entirely cover even very large trees. It can cover trees and other vegetation so thoroughly that sunlight cannot get to the leaves of the plants below it.

It is also a perennial, meaning it does not die back each year. It was first noticed growing on the Island of Hawaii in 1986 and is already considered to be a serious problem plant there.

Here in the CNMI it was first noticed infesting a tiny area in 1994 by Dr. Aubrey Moore (one of the co-authors of our insect chapter). He reported it to all of the CNMI and federal authorities. An early attempt to control it was not successful due to a lack of funding and manpower commitment.

At the time of this book’s writing, researchers at the Northern Marianas College Research, Extension and Educational Services Program are documenting the rate of spread of the plant. Hopefully, an adequate control program will eventually be launched to control it.



Coccinia, Family *Cucurbitaceae*, has showy, white 5-petaled flowers. Its fruits are smooth and oval-shaped. Like other vines, it has tendrils which grasp onto other plants’ branches.