

Kure Atoll Plant Field Identification



Part IV

Eleusine indica

Goosegrass

Eleusine is one of the most common non-native grasses on Kure. It has a long branched seed head, and is characterized by long narrow blades which have a distinct keel. The blades are soft and often prostrate, compared to the more rigid upright blades of *Eragrostis variabilis*. It can be distinguished from *Cenchrus* based on the reddish basal stem of the latter, and from *Setaria* based on blade width and color.



Eleusine indica

Eleusine cotyledons are usually very long and slender. It is somewhat more common to see Eleusine at this single-bladed stage than other grasses. Following blades are also relatively long and slender, though there can be a lot of variability, especially in young plants.



Eleusine indica

At a young age Eleusine blades can be virtually identical in aspect ratio to Setaria blades. Both of the plants below have a long narrow cotyledons, wider, more tapered following blades, and fine striations. The keel is somewhat more pronounced on the Eleusine (left) but it would be hard to definitively distinguish these plants to species at this size.



Eleusine indica

Eleusine has striations on the blades but they are very narrow, hence the blades are generally darker green, and the central keel is more apparent than in Setaria. Also note the fine white hairs that grow on the stem and dorsal surface of the blades of older Eleusine. These are lacking on Setaria.



Eragrostis amabilis

Lovegrass

E. amabilis is a non-native plant that can generally be distinguished by prostrate stems with a reddish base, narrow leaves, and an open panicle (seed head). It is most commonly found in open areas in the dunes. It occurs in the interior but is probably often suppressed by other plants so is most likely to be found in disturbed or open areas.



Eragrostis amabilis

E. amabilis is often found in the same habitat as *Lepturus repens*. Very small plants can generally be distinguished based on the reddish stem, broader flat leaves (compared to narrow, somewhat curled leaves on *Lepturus*), and the more erect growth pattern of *Lepturus*.

Lepturus



E. amabilis



Eragrostis paupera

Dwarf Eragrostis

Eragrostis paupera, a native grass, is truly a dwarf. It can produce seed as little more than a sprout. Large plants are seldom more than a few inches tall or wide. It can be found abundantly on the runway but is rare elsewhere except due to out planting.



Eragrostis paupera

Young sprouts of *E. paupera* are characterized by opposite curled leaves, with early leaves often withering to a brown sheath from which later leaves grow. See the *Polypogon interruptus* section for comparative photos of those to plants as sprouts.



At this stage they are very similar to *Fimbristylis*.



Eragrostis paupera

At intermediate stages *E. paupera* is structurally almost identical to *Polypogon*. Leaf shape, texture, color, and branching can all be very similar in both species. But, placed in context *E. paupera* is generally much smaller at this stage than *Polypogon*.

E. paupera



Polypogon



Eragrostis paupera

As can be seen in the photos below, Polypogon that is branching at the base may be 2-3 times larger than *E. paupera* at the same stage. In the photo below right *E. paupera* has already started seeding. Polypogon generally will be much larger before it begins to produce seed.



Eragrostis paupera

At even larger sizes the two plants no longer are difficult to discriminate. *E. paupera* grows from a central stem and radiates outward in a generally linear fashion, Polypogon grows in disorganized clusters, with heavily curved blades. While Polypogon can range in color from light to dark green, it rarely resembles the pale grayish-green color of *E. paupera*.



Eragrostis variabilis

Kawelu

Eragrostis variabilis, a native grass, forms in dense bunches and is the largest grass found on Kure. It is characterized by long, stiff, flat blades lacking a central keel.



Eragrostis variabilis

Kawelu cotyledons are slender and very small. They, and other early blades, are usually somewhat curled. Kawelu tends to germinate in the winter, and sprouts can be seen as dense clusters of tiny, almost hair-like blades growing at the base of mature bunches. The blades are very long and narrow compared to Cenchrus, Eleusine, and Setaria.



Eragrostis variabilis

As *Eragrostis* grows it generally has an erect posture and the blades begin to take on a characteristic corkscrew twist. These older blades also have a dark shiny surface that is noticeably different from other grasses on Kure. The blades lack a central keel that is seen on *Cenchrus*, *Eleusine*, and *Setaria*.



Eragrostis variabilis

In the photo below several Eragrostis sprouts are joined by a single Eleusine sprout. The Eleusine is broad and tapered by comparison to the narrow Eragrostis blades.



Eragrostis variabilis

E. variabilis seeds generally germinate in greatest number in the winter. Young sprouts are very small and slender, and can be easy to overlook. When they grow in conjunction with broader bladed non-native grasses they are probably often sprayed. Keep an eye out for clusters of slender bladed, upright sprouts in the vicinity of mature plants.



Fimbristylis cymosa

Button Sedge

Fimbristylis is a native sedge growing in dense clusters of stiff curved blades. It is common on the runway and has been out planted in other open areas.



Fimbristylis cymosa

Fimbristylis seedlings are very small and it is difficult to find them at the cotyledon stage. Early leaves are both curled and curved, like later leaves, with additional leaves growing out in a rosette pattern. Leaf shape and growth pattern at this age is similar to Eragrostis paupera.



Lepturus repens

Lepturus

Lepturus is native to Kure. Its range was very restricted as recently as 2001, but out planting and the spread of seeds by the 2011 tsunami have distributed it widely along the west coast where it is now abundant. It grows in bunches with long round stems.



Lepturus repens

Lepturus cotyledons are long and relatively broad compared to the first true leaves, with a consistent width over most of the length of the blade, then tapering abruptly to a point. The blades have fine but distinct striations.



Lepturus repens

Young sprouts (below) are characterized by stiff, narrow, curved and curled blades. It is most likely to be found growing in conjunction with *Sporobolus* (right) which has broad tapered blades, an *E. amabilis* (below right), which has relatively short broad leaves and a reddish basal stem.



Lepturus repens

Lepturus sprouts can also appear red at the base though the color is often a bit more on the purple side, and is likely to be associated with die-off of early blades. In both of the plants below the narrow blade and erect growth pattern distinguish them from *E. amabilis*.



Lepturus repens



Older *Lepturus* (left) have an erect growth pattern and long, narrow blades. *E. amabilis* (below) tends to be prostrate with shorter blades and again is more prone to a red basal stem.



Lepturus repens

At larger sizes *Lepturus* often grows radially outward in a rosette pattern. Though this pattern is similar to that seen with *E. amabilis*, and the branching is also similar, *Lepturus* is generally larger, more dense, and again lacks the red stems found with *E. amabilis*.



Lepturus repens

Mature *Lepturus* bunches have a large number of round, segmented stems. The mature blades are long and narrow, with fine striations and minute teeth in the margin. The teeth are visible in the photo below right, on the lower margin of the upper blade.



Poa annua

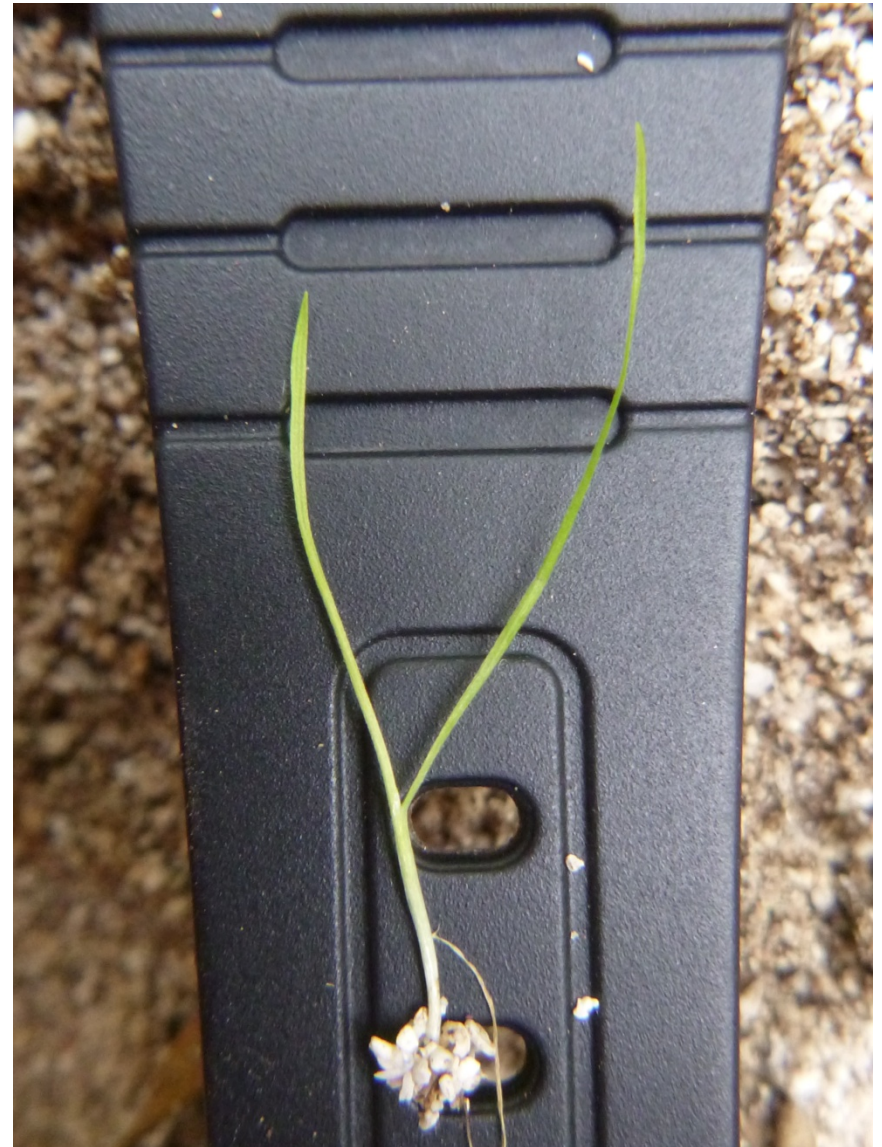
Bluegrass

Poa is a seasonal grass first occurring in November or December. It resembles Polypogon, also seasonal, especially when it is small, so it is useful to study both of them prior to their appearance in the fall. Poa is fairly widespread and is fairly common in the Poles, Mea Mea, and No Man's Land RAs.



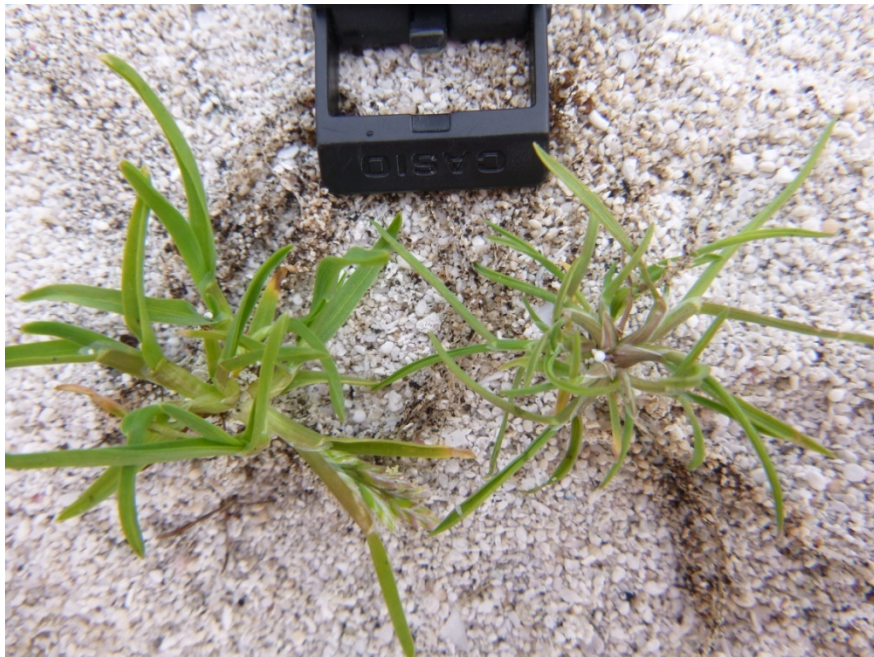
Poa annua

Poa sprouts tend to have very long, slender blades, often germinating from fairly deep in sandy soil. Blades from one plant may appear like individual plants as they breach the soil surface.



Poa annua

At small sizes Poa is often very difficult to distinguish from Polypogon. In both photos below Poa is on the right. In plants of similar size Poa has narrower blades but is otherwise very similar. Poa matures much more slowly than Polypogon and at a larger size . Note that in both photos below the Polypogon is seeding.



Poa annua

In larger plants Poa occurs as clumps of long, slender, mostly unbranched blades. The blades are soft, and usually fairly light green, especially when growing in shade. Poa reaches much larger sizes prior to seeding than Polypogon, and also take a fairly long time to seed, so when it is regularly treated it is uncommon to encounter mature plants. When growing in open sandy areas the blades often branch below the surface, as in the photo below left.



Poa annua

Polypogon can also be a very pale green, usually when growing in shaded conditions. These pale blades will often show distinct striations, similar to Setaria though of course Polypogon blades are long and narrow compared to Setaria.



Polypogon interruptus

Ditch Polypogon

Polypogon is a seasonal plant usually first occurring in October or November and persisting into the spring. It tends to mature somewhat more slowly than other non-native grasses but more quickly, and at smaller sizes, than Poa.



Polypogon interruptus

In its earliest stages Polypogon develops long narrow ascending blades that are usually somewhat curled. In sandy soil these sprouts usually occur far enough below the surface that blades from the same sprout appear like separate plants. At this stage the basic morphology is similar to *E. paupera*. Note in the photo below right that the older leaves have begun to take on both a curved and curled aspect.



Polypogon interruptus

Small sprouts bear a striking resemblance to *E. paupera*, including narrow curled leaves, and a tendency for early leaves to die back, leaving a sheath from which the plant continues to grow. At this early stage *Polypogon* leaves are already softer and more flexible, with a tendency towards S-curved blades, compared to the single curvature and stiffer blades of *E. paupera*.



Polypogon



E. paupera

Polypogon interruptus

In the photo below both *E. paupera* (left) and *Polypogon* have narrow curled leaves, and similar branching structure. Plants at this stage are difficult to identify without side by side comparison, but *E. paupera* is generally much smaller at this stage as shown in the photo. It is often useful to have a good knowledge of plant distribution to limit the need to separate these two species. *E. paupera* is mostly restricted to the runway.



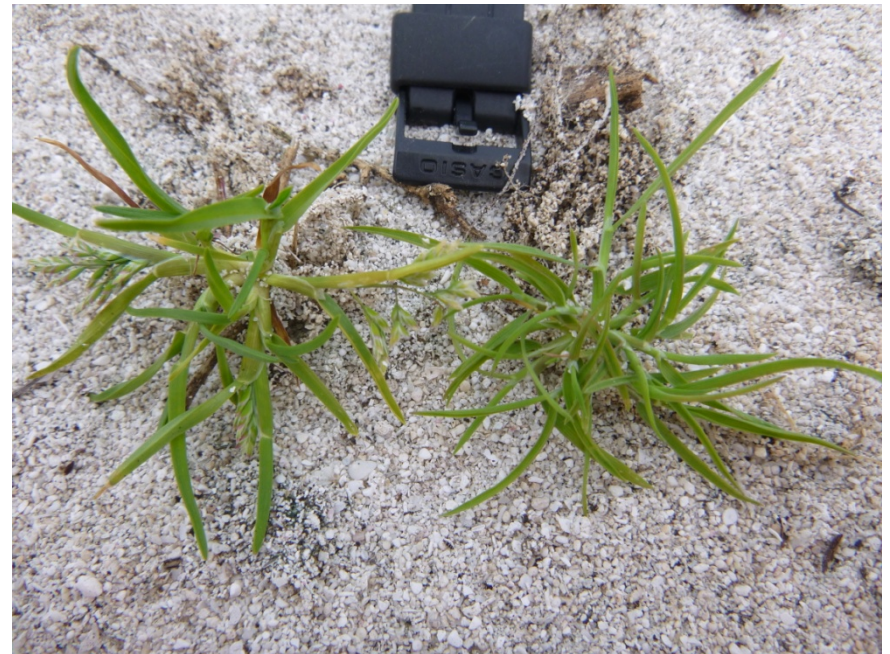
Polypogon interruptus

At later stages Polypogon takes on a dense clumping aspect and tends to be dark green. *E. paupera*, by contrast, takes on a linear radiating aspect and tends to be yellowish green.



Polypogon interruptus

Polypogon is also very similar to Poa. Poa typically has more slender blades and matures much more slowly. In the photo below left, 3 Polypogon are joined by a single Poa (rightmost plant). In the photo below right Polypogon is on the left. Note that all of the Polypogon are producing seed, while the Poa are not. Polypogon is fairly common on the trail from the main house to the beach and in Road to Runway RA, where Poa is absent, so this is a good place to get a feel for Polypogon.



Setaria verticillata

Bristly Foxtail

Setaria is a widespread non-native grass on Kure, somewhat preferring open areas, and one of the few plants that seems to tolerate growing under Tournefortia. It is characterized by broad, pale blades, and though the blades have a central keel like Cenchrus and Eleusine, the pale blade coloration makes it less easy to see.



Setaria verticillata

Setaria cotyledons are long and slender, with very little variation in width from near the base to near the tip. Subsequent blades are wide and tapered. On average Setaria is a paler green than Cenchrus, Eleusine, and Dactyloctenium.



Setaria verticillata

Setaria blades often show distinct striation. Though other grasses also have some striation, the broad width of the pale stripes make Setaria tend towards a much paler overall blade color. These striations somewhat mask the keel, which is visible on close inspection. The photo below right is a very reddish plant but is still readily identified as Setaria based on the relative length and width of the blades. Setaria is probably most similar to Dactyloctenium in blade shape and overall appearance but they can be distinguished at all sizes. See the Dactyloctenium section for a comparison of the two plants.



Sporobolus pyramidatus

Dropseed

Sporobolus is a perennial grass colonizing open areas and hard substrates. There is some die-back of older plants in the winter. It is characterized by broad tapering blades, and a relatively closed seed head on a long stalk. It is abundant on the runway, and common on the roads and in other open sandy areas.



Sporobolus pyramidatus

Sporobolus cotyledons are relatively long and narrow, the second and following blades generally broad and tapering. At this stage it is very small, which can be used to distinguish it from other broad bladed grasses such as Setaria.



Sporobolus pyramidatus

Sporobolus continues to produce short, broad, highly tapered blades, with new stems radiating out from the base. The leaf shape and size is sufficient to distinguish it from all other grasses on Kure.



References

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Steen, Edwin B. 1971. Dictionary of Biology, Harper and Row, New York, NY.

Web Sites

Pacific Island Ecosystems at Risk (PIER), <http://www.hear.org/pier/species>