Comparative Seed Manual: CHENOPODIACEAE/AMARANTHACEAE

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This seed manual consists of photos and relevant information on plant species housed in the Integrative Subsistence Laboratory at the Anthropology Department, University of California, Santa Barbara. The impetus for the creation of this manual was to enable UCSB graduate students to have access to comparative materials when making in-field identifications. Most of the plant species included in the manual come from New World locales with an emphasis on Eastern North America, California, Mexico, Central America, and the South American Andes.

Published references consulted[1]:

1998. Moerman, Daniel E. *Native American ethnobotany*. Vol. 879. Portland, OR: Timber press.

2009. Moerman, Daniel E. *Native American medicinal plants: an ethnobotanical dictionary*. OR: Timber Press.

2010. Moerman, Daniel E. *Native American food plants: an ethnobotanical dictionary*. OR: Timber Press.

Species included herein:

Amaranthus caudatus

Amaranthus cruentus x A. powellii

Amaranthus gangeticus var elephant head

Amaranthus gangeticus var greek

Amaranthus hypochondriacus x A. hybridus

Atriplex argentea
Atriplex canescens
Atriplex canescens var. linearis
Atriplex deserticola
Atriplex lentiformis
Atriplex lentiformis var. *breweri*
Atriplex leucophylla
Atriplex linearis
Atriplex repanda
Chenopodium ambrosioides
Chenopodium berlandieri
Chenopodium capitatum
Chenopodium quinoa var. brightest brilliant
Chenopodium quinoa var. faro
Chenopodium quinoa var. temuco
Chenopodium spp.
Dysphania ambrosioides (previously *Chenopodium ambrosioides*)

[1] **Disclaimer**: Information on relevant edible and medicinal uses comes from a variety of sources, both published and internet-based; this manual does **NOT** recommend using any plants as food or medicine without first consulting a medical professional.

Amaranthus caudatus

Family: Amaranthaceae
Common Names: Foxtail amaranth, Love-lies-bleeding, Pendant amaranth, Purple amaranth, Quilete, Tassel flower, and Velvet flower
Habitat and Growth Habit: This plant is native to India, Africa, and Peru. It can also be distributed in parts of North and South America.
Human Uses: The seeds are edible when cooked and when ground, are used for baking. The leaves can be eaten raw or cooked. Fresh plants cooked and consumed as greens. The *Amaranthus caudatus* is used in the garden as ornamental flowers. The flowers can be dried and used for arrangements where the colors are long-lasting. Flowers are often hung from baskets or used in beds and borders. Red cultivators are used to create a red food coloring. Yellow and green dye is harvested from the rest of the plant. The *Amaranthus caudatus* is also used as medicine in the form of an astringent, anthelmintic and diuretic.
Sources Consulted:
Moerman 1998, 2009
http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a558 , accessed February 8, 2019.
http://www.pfaf.org/USER/Plant.aspx?LatinName=Amaranthus+caudatus , accessed February 8, 2019.
http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=200006980, accessed February 8, 2019.
https://plants.usda.gov/core/profile?symbol=AMCA3, accessed February 8, 2019.

Amaranthus cruentus x A. powellii

Family: Amaranthaceae
Common Names: Hopi red dye, Hop red dye amaranth, Blood amaranth, and Prince's Feather
Habitat and Growth Habit: This commonly cultivated plant is found in North and South America.
Human Uses: This plant is used ornamentally in gardens. Hopi communities used the red coloring to dye their piki bread and cornbread a shade of red. Along with being used to make red dye, the edible seeds are commonly used in replacement of poppy seeds in recipes and are used to make flour. Leaves of the vegetable are consumed as greens.
Sources Consulted:
Moerman 1998
http://www.chilternseeds.co.uk/item_84n_amaranthus_cruentus_x_powellii_hopi_red_dye_seeds, accessed February 8, 2019.
https://www.anniesannuals.com/plants/view/?id=2397, accessed February 8, 2019.
https://www.selectseeds.com/organic-annual-seeds/amaranth_hopi_red_dye_organic_seeds.aspx, accessed February 8, 2019.
http://www.thymegarden.com/amaranth-hopi-red-dye, accessed February 8, 2019.

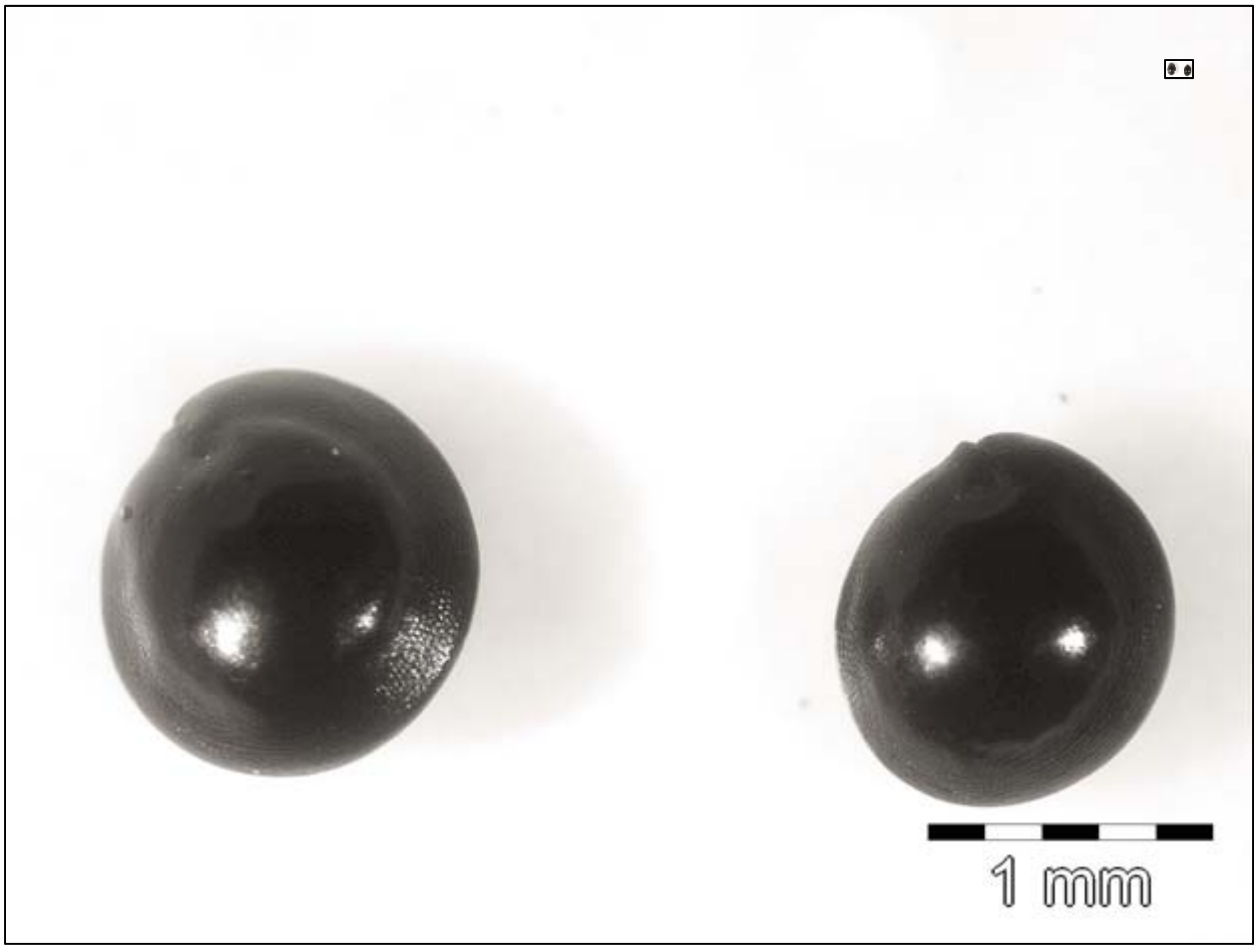
Amaranthus gangeticus var *elephant head*

Family: Amaranthaceae
Common Names: Elephant-head amaranth
Habitat and Growth Habit: This particular species was brought to the USA from Germany.
Human Uses: These plants are sold and cultivated as ornamental plants. Developing leaves of the plant are also edible.
Sources Consulted:
https://www.rareseeds.com/elephant-head-amaranth/ , accessed February 8, 2019.
https://www.fedcoseeds.com/seeds/search?item=4837 , accessed February 8, 2019.
http://www.newworldencyclopedia.org/entry/Amaranth , accessed February 8, 2019.

Amaranthus gangeticus var *greek*

Family: Amaranthaceae
Common Names: Greek Amaranth
Habitat and Growth Habit: *Amaranthus gangeticus* is found in Greece.
Human Uses: The plant produces edible leaves. This plant is used often as an ornament. Many people will steam the vegetable before consuming as part of a meal.
Sources Consulted:
http://herbalistics.com.au/product/amaranthus-gangeticus-greek-amaranth-seed/, accessed February 8, 2019.

Amaranthus hypochondriacus x A. hybridus



Family: Amaranthaceae
Common Names: Prince's Feather, Prince-of-wales feather, and Slim Amaranth
Habitat and Growth Habit: This species can be found in tropical, subtropical, and temperate regions.
Human Uses*:* *Amaranthus hybridus* is used as a ceremonial medicine. This plant is used as a medicine. Some uses include dermatological use as an astringent, an alleviator for heavy menstruation, and as a gastrointestinal aid to relieve stomach issues. Not only used for traditional medicine, this plant also has culinary value. Young plants can be boiled and then dried to use in the less abundant winter.
Web Sources Consulted:
Moerman 1998
https://plants.jstor.org/compilation/amaranthus.hypochondriacus , accessed February 8, 2019.
http://www.pfaf.org/user/Plant.aspx?LatinName=Amaranthus+hypochondriacus, accessed February 8, 2019.

Atriplex argentea

Family: Chenopodiaceae/Amaranthaceae
Common Names: Silverscale saltbush, Silver orache, Silver saltweed, Stalked saltbush
Habitat and Growth Habit: This plant is distributed from North America to South America in desert and seashore habitats. It can be located in saline soils, sagebrush scrub, woodlands, and wetland riparian.
Human Uses: The leaves of this plant are eaten cooked or boiled. The tender and young leaves can be used as greens. The seeds are also edible cooked, and the seeds can be ground into a meal. One traditional medicinal use includes using the leaves to make a fumigant to be used to treat pain. As well, the plant can be used in cold infusion to treat or purify bad drinking water. Lastly, the infusion can also be consumed to treat stomach ache.
Sources Consulted:
http://www.calflora.org/cgi-bin/species_query.cgi?where-taxon=Atriplex+argentea, accessed May 13, 2019.
http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=242415533, accessed May 13, 2019.
http://www.pfaf.org/USER/Plant.aspx?LatinName=Atriplex+argentea, accessed May 13, 2019.

Atriplex canescens

Family: Chenopodiaceae/Amaranthaceae
Common Names: Chamiso, Chamiza, Four wing saltbush, Hoary saltbush, Shadscale, Wingscale, Cenizo, Chico
Habitat and Growth Habit: This plant can be found in sand dunes, mountains, and desert habitats. It is distributed in North and South America and is found in coastal strands, valley grasslands, chaparral, coastal sage scrub, woodlands, and creosote bush scrub.
Human Uses: This plant has many uses that include: food purposes, ecological restoration, creation of dye, making of Native American flour, in Navajo medicine for coughs and toothaches, landscaping, fuel, and even as an Zuni ant bite remedy.
Sources Consulted:

https://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=967, accessed May 13, 2019.
http://www.laspilitas.com/nature-of-california/plants/103--atriplex-canescens, accessed May 13, 2019.
https://www.fs.fed.us/database/feis/plants/shrub/atrcan/all.html, accessed May 13, 2019.
https://www.fs.fed.us/wildflowers/plant-of-the-week/atriplex_canescens.shtml, accessed May 13, 2019.
http://scienceviews.com/plants/fourwingsaltbush.html, accessed May 13, 2019.

Atriplex canescens var. linearis

Family: Chenopodiaceae/Amaranthaceae
Common Names: Thinleaf fourwing Saltbush, Narrowleaf saltbush
Habitat and Growth Habit: Native to California, but it can be found in Arizona and Northern Mexico. This species is distributed in salt flats, dry lake beds, coastline, and desert scrub.
Human Uses: This plant has multiple uses by southwestern United States indigenous peoples. Some of these uses include food, soap, medicine, and more.
Sources Consulted:
https://plants.usda.gov/core/profile?symbol=ATCAL4, accessed May 13, 2019.
http://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=80289, accessed May 13, 2019.
http://southwestdesertflora.com/WebsiteFolders/All_Species/Chenopodiaceae/Atriplex%20canescens,%20Four-wing%20Salt%20Bush.html, accessed May 13, 2019.

Atriplex deserticola

Family: Chenopodiaceae/Amaranthaceae

Common Names:

Habitat and Growth Habit: Within the genus of *Atriplex* many species are found in the Americas. There is some evidence that *Atriplex deserticola* is found in southern South America. Notably, this particular species lacks research.

Human Uses: The human uses for this particular species are uncertain at this time.

Sources Consulted:

https://species.wikimedia.org/wiki/Atriplex_deserticola, accessed May 15, 2019.

Atriplex lentiformis

Family: Chenopodiaceae/Amaranthaceae
Common Names: Quail bush, Big saltbrush, Big saltbush, Quailbrush, Lenscale, White thistle, Brewer's saltbush
Habitat and Growth Habit: This species is native to California, but it can also be found outside of California borders. Some other areas of distribution include the southwestern United States and in Northern Mexico. Habits include salt flats, dry lake beds, coastline, and desert scrub.
Human Uses: This plant has many human uses including traditional medicinal uses and also culinary uses. To start, the Cahuilla have made porridge from the seeds ground into the flour. The Cahuilla would use the leaves as a drug for cold remedy. For instance, dried leaves would be smoked to treat a head cold, and fresh leaves could be chewed to treat a head cold. As well, the Papago and Pima would use the seeds for food. The Pima used the seeds as a "starvation food." Pima have also used the powdered down roots as a poultice to put on sores. Cahuilla also used crushed leaves to make a soap for cleansing clothing and other articles.
Sources Consulted:
Moerman 1998, 2010
http://www.laspilitas.com/nature-of-california/plants/105--atriplex-lentiformis-breweri, accessed May 17, 2019.
http://www.calflora.org/cgi-bin/species_query.cgi?where-taxon=Atriplex+lentiformis, accessed May 17, 2019.
https://www.fs.fed.us/database/feis/plants/shrub/atrlen/all.html, accessed May 17, 2019.

Atriplex lentiformis var. breweri

Family: Chenopodiaceae
Common Names: Quail bush, Big saltbrush, Lenscale, White thistle, Brewers salt bush
Habitat and Growth Habit: Quail bush is native to the United States and Mexico and is found in coastal and salt marsh habitats. The plant grows well in alkaline soils and is found in valley grasslands, coastal salt marshes, coastal sage scrubs, and wetland-riparian areas.
Human Uses: It serves well as a windbreak and border plant. It can also be used in restoration for habitats. This plant is also edible. Native Americans liked to use the plant for its salty taste.
Sources Consulted:

https://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=986, accessed May 20, 2019.
https://www.calflora.org/cgi-bin/species_query.cgi?where-taxon=Atriplex+lentiformis+ssp.+breweri, accessed May 20, 2019.
https://www.laspilitas.com/nature-of-california/plants/105--atriplex-lentiformis-breweri, accessed May 20, 2019.
http://calscape.org/Atriplex-lentiformis-ssp.-breweri-() , accessed May 20, 2019.
https://www.calfloranursery.com/plants/atriplex-lentiformis-breweri , accessed May 20, 2019.

Atriplex leucophylla

Family: Chenopodiaceae
Common Names: Beach saltbush, White orache, Sea scale, Seascale
Habitat and Growth Habit: This plant mainly grows on the coastlines and sandy areas. It is confined mostly to Oregon, California, Baja California, and the Channel islands.
Human Uses: Beach saltbush may have ornamental uses as it is drought tolerant and it is known to attract butterflies. There may be other uses, but they are underrepresented.
Sources Consulted:

http://www.calflora.org/cgi-bin/species_query.cgi?where-taxon=Atriplex+leucophylla, accessed May 20, 2019.
https://www.laspilitas.com/nature-of-california/plants/3472--atriplex-leucophylla, accessed May 20, 2019.
https://plants.usda.gov/core/profile?symbol=ATLE2, accessed May 20, 2019.
http://www.watershednursery.com/nursery/plant-finder/atriplex-leucophylla/ , accessed May 20, 2019.
http://nathistoc.bio.uci.edu/plants/Chenopodiaceae/Atriplex%20leucophylla/Atriplex%20leucophylla.htm, accessed May 20, 2019.

Atriplex repanda

Family: Chenopodiaceae/Amaranthaceae
Common Names: Unknown
Habitat and Growth Habit: This species is native to Chile, and is considered a neotropical plant.
Human Uses: The human uses of this particular species are unknown.
Sources Consulted:
https://eol.org/pages/5212756/data, accessed May 15, 2019.
http://en.hortipedia.com/wiki/Atriplex_repanda, accessed May 15, 2019.
https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=822828#null, accessed May 15, 2019.

Chenopodium ambrosioides

Family: Chenopodiaceae
Common Names: Mexican-tea, Ragweeds, American wormseed, Hedge mustard, Epazpte
Habitat and Growth Habit: This plant is native to the Americas, especially tropical America. This plant grows on cultivated beds.
Human Uses: The essential oil of this plant has many uses in traditional medicine, although it can be toxic. The leaves can be eaten raw in small quantities or cooked. The tender leaves are used as a flavoring or potherb. The seeds can be soaked, rinsed, and cooked to remove any saponins. Even more, in Central and South America a tea is made to rid people of parasitic worms, as a digestive remedy, and the plant can be used topically as a wound healing mechanism. Notably, the oil from the seed is indeed successful at ridding parasites. This includes amoebas causing dysentery. There are also some notes of the plant being used as a fumigant to protect against mosquitos.
Sources Consulted:
http://bioweb.uwlax.edu/bio203/2011/mccarthy_mega/Medicinal_uses.htm, accessed May 20, 2019.
https://plants.usda.gov/core/profile?symbol=DYAM#, accessed May 20, 2019.
http://earthmedicineinstitute.com/more/library/medicinal-plants/chenopodium-ambrosioides/, accessed May 20, 2019.
http://earthmedicineinstitute.com/more/library/medicinal-plants/chenopodium-ambrosioides/, accessed May 20, 2019.
http://www.rain-tree.com/epazote.htm#.WKykSzgqOXk, accessed May 20, 2019.
http://www.pfaf.org/user/Plant.aspx?LatinName=Chenopodium+ambrosioides, accessed May 20, 2019.

Chenopodium berlandieri

Family: Chenopodiaceae/Amaranthaceae

Common Names: Pitseed goosefoot, Huauzontle, Lamb's quarters, Berlandier's goosefoot, Bush's goosefoot, Zschack's goosefoot, Nuttall's goosefoot

Habitat and Growth Habit: This plant is considered to be native to California and other areas in North America, specifically Florida, Texas, and Mexico. The species' habitat includes salt marshes of rocky slopes and cultivated beds.

Human Uses: The leaves can be eaten raw or cooked with caution as many plants in the genus of *Chenopodium* contain saponins, which can be toxic to humans in high levels. The seeds are often soaked overnight and rinsed before consumption. The seed has also been ground into a powder for flour.

Sources Consulted:

https://plants.usda.gov/core/profile?symbol=CHBE4, accessed May 15, 2019.

http://www.calflora.org/cgi-bin/species_query.cgi?where-taxon=Chenopodium+berlandieri, accessed May 15, 2019.

http://www.pfaf.org/USER/Plant.aspx?LatinName=Chenopodium+berlandieri, accessed May 15, 2019.

Chenopodium capitatum

Family: Chenopodiaceae/Amaranthaceae
Common Names: Strawberry-blite, Blite goosefoot, Strawberry spinach, Indian paint, Indian ink
Habitat and Growth Habit: This species can be found and is native to Northern America, Europe, and New Zealand. Its habitat includes mountain valleys, foothills, and montane regions.
Human Uses: Strawberry-blite is used for the creation of dye, a juice, and has edible fruits and leaves. The plant also has a couple of traditional medicinal uses. The plant can be used as a lotion to treat black eyes and head bruises. The seed juice has been used with a plant infusion to treat lung congestion.
Sources Consulted:
http://northernbushcraft.com/plants/strawberryBlite/notes.htm, accessed May 17, 2019.
http://www.pfaf.org/USER/Plant.aspx?LatinName=Chenopodium+capitatum, accessed May 17, 2019.
https://www.gardeningknowhow.com/edible/herbs/strawberry-spinach/growing-strawberry-spinach.htm, accessed May 17, 2019.

Chenopodium quinoa var. brightest brilliant

Family: Chenopodiaceae/Amaranthaceae
Common Names: Quinoa, Rainbow quinoa
Habitat and Growth Habit: This variation of quinoa is native to mountain habitats of South America. This species is native to southern and western South America.
Human Uses: This species is uses as a food and for culinary purposes. The plant is also decorative in its nature. The harvested seeds can be dried and stored for later use as a grain. The young leaves can be harvested and can be eaten cooked or raw.
Sources Consulted:
https://www.botanicalinterests.com/products/view/2013/, accessed May 17, 2019.
http://www.territorialseed.com/product/Brightest_Brilliant_Rainbow_Quinoa_Organic_Seed/organic-gourmet-greens-seed, accessed May 17, 2019.
http://www.victoryseeds.com/quinoa_brightest-beautiful-rainbow.html, accessed May 17, 2019.
https://www.etsy.com/hk-en/listing/218798096/quinoa-plant-seeds-chenopodium-quinoa, accessed May 17, 2019.

Chenopodium quinoa var. faro

Family: Chenopodiaceae/Amaranthaceae
Common Names: Red faro, Red faro quinoa, Quinoa
Habitat and Growth Habit: Red faro is native to Northern Chile.
Human Uses: This form is used for ornamental and culinary purposes. The seeds are dried and used later as a grain. It is important to note that quinoa is not a true grain because it is not in the grass family. Because of this it is higher in protein and rich in iron.
Sources Consulted:
http://store.underwoodgardens.com/Faro-Quinoa-Chenopodium-quinoa/productinfo/V1410/#.WL2g6jgqOXk, accessed May 17, 2019.
http://www.victoryseeds.com/quinoa_red-faro.html, accessed May 17, 2019.
http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0101-20612012000400029, accessed May 17, 2019.

Chenopodium quinoa var. temuco

Family: Chenopodiaceae/Amaranthaceae
Common Names: Quinoa
Habitat and Growth Habit: Quinoa is native to South America. There is little published research on *Chenopodium quinoa var. temuco*. Therefore, the origin and native habitat of this particular species cannot be stated.
Human Uses: Like other species of quinoa this plant is used for ornamental and culinary purposes.
Sources Consulted:
https://www.google.com/search?q=Chenopodium+quinoa+var.+temuco&oq=Chenopodium+quinoa+var.+temuco&aqs=chrome..69i57.943j0j7&sourceid=chrome&ie=UTF-8, accessed May 17, 2019.

Chenopodium spp.

Family: Chenopodiaceae/Amaranthaceae
Common Names: Perennial quinoa
Habitat and Growth Habit: The range of this genera includes Africa, Australasia, North America, Europe, and Oceania.
Human Uses: Species under this genera can be referred to as the “mother grain” for their nutritional content. Different varieties can be boiled like rice, ground into flour, made into soap, fed to livestock, or fermented into an alcoholic beverage.
Sources Consulted:
https://pfaf.org/user/Plant.aspx?LatinName=Chenopodium+spp., accessed May 17, 2019.

Dysphania ambrosioides (previously *Chenopodium ambrosioides*)

Family: Chenopodiaceae/Amaranthaceae
Common Names: Ragweeds, American wormseed, Bitterweed, Mexican tea, Hedge mustard, Indian goosefoot, Jerusalem tea, Bluebush, Tu Jing Jie
Habitat and Growth Habit: This plant is found in saline, dry hot environments of North America. It is distributed in wetland riparian and disturbed areas.
Human Uses: Humans have used this plant for cultivation purposes and there are a lot of traditional Native American medicinal usages and other medicinal usages. Native Americans have used this plan in the treatment for intestinal worms. The whole plant, leafs, and seeds are used in different forms of traditional medicine. Other treatments include regulation of menses, pain alleviation, heat and poison clearing, clearing of postpartum blood, and more. However, most of the use deals with expelling worms. In herbal Latin medicine, this plant is a common household remedy to treat children and adults with intestinal parasites. Also, the U.S. Pharmacopeia had used this drug against amoebas, roundworms, and hookworms. Notably, this plant can be toxic.
Sources Consulted:
http://bioweb.uwlax.edu/bio203/2011/mccarthy_mega/Medicinal_uses.htm, accessed May 17, 2019.
https://plants.usda.gov/core/profile?symbol=DYAM#, accessed May 17, 2019.
http://earthmedicineinstitute.com/more/library/medicinal-plants/chenopodium-ambrosioides/, accessed May 17, 2019.
http://earthmedicineinstitute.com/more/library/medicinal-plants/chenopodium-ambrosioides/, accessed May 17, 2019.
http://www.rain-tree.com/epazote.htm#.WKykSzgqOXk , accessed May 17, 2019.

http://www.pfaf.org/user/Plant.aspx?LatinName=Chenopodium+ambrosioides, accessed May 17, 2019.
http://keys.lucidcentral.org/demo/js_player/sew2/text/dysphania_ambrosioides.htm, accessed May 17, 2019.