Benefits of Arnica
In and out of the Garden

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• Central California raised

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• UC Davis TERC
The Tahoe Environmental Research Center (TERC) is a global research leader providing the science for restoring and sustaining Lake Tahoe and other treasured lakes worldwide. TERC educates the next generation of leaders and inspires environmental stewardship.
UC Davis TERC Facilities at Lake Tahoe
TERC Education

Eriksson Education Center
Historic Fish Hatchery
Tahoe City Demo Garden

Tahoe Science Center
Tahoe Plant Workshops

- Inception
- Sponsors:
  - Lake of the Sky Garden Club
  - UC Davis TERC
  - Truckee Demo Garden
- Native Plants
The Benefits of Arnica

• Current environmental conditions
• Utilize native plants in the gardens
• Arnica in the garden
• Arnica in your home
Human society has altered the natural environment

- Populations have shifted from rural to urban and suburban
- Natural Landscapes have been radically altered by population growth

Source: PBS.org/the first measured century
Slide: courtesy of Ellen Zagory
Our relationship with the environment
We Love Enjoy Nature

LAKE TAHOE TRASHED
Industry continues to harvest resources and create waste
Pollution of our waterways with sediment and chemical runoff
Children in cities and suburbs may grow up never having experienced nature.
Forests, prairies, and wetlands replaced by agriculture, industry and homes.
Human population continues to increase
California’s Population Growth

1950 - 10 million people

2010 - 37 million people

2060 - (Projected) 52 million

Source: Sacramento Bee
More people means…

MORE…
- Buildings
- Homes

- Constructed landscapes
- Parking lots
- Roads and cars

- Structures
- Impermeable surfaces
More people means...

LESS:

- Natural environment or habitat for wild creatures
- Increasing dependence on:
  - Conservation areas
  - Parks
  - Our urban and suburban gardens
Pop Quiz Hot Shot!

- 7.4 billion as of 2016
  - World Population
- 11.2 billion in the year 2100
  - Estimated World Population
- A rate of 100 times higher than normal
  - Current vertebrate extinction rate
- 71% of the Earth’s Surface
  - Water
- 2.5% of that Water
  - Freshwater
- 1% of our freshwater
  - Is easily accessible
“Traditional” Garden

- Lawns still popular for large areas
- Plants selected for ornamental value
- Landscapes and gardens as decorative amenities
A new paradigm: an ecological landscape

- Supports wildlife: pollen, nectar, seeds, and fruits
- Choose plants that conserve resources
  - Water
  - Time
  - Fertilizers
The Importance of Plants

- Plants are the foundation of the “food web”
- *Insects* provide food for birds, bats, fish, frog, people, etc.
- Provide ecological services
Why go native?
Not just Natives
Bring on the Bees and Butterflies

• POLLINATION!
  – Vital to native plant reproduction
  – facilitates the continued survival of native species
  – Critical for edible plants like fruits and vegetables
Support your pollinators

“Gardens can provide oases of safe habitat for migration through ‘deserts’ of concrete or intensively cultivated farmland”

Royal Horticulture Society The Garden April 2012
What plants to plant?

- Home Landscaping Guide
- Local Demonstration Gardens
  - Tahoe City Demonstration Garden
  - Truckee Demo Garden
  - North Tahoe Demo Garden
  - Evans Family Garden
- Lake Tahoe Master Gardeners
- Google!
Go Native!

• Require less resources
• Adapted to Tahoe
• Low maintenance
• Curb appeal
• Maintain habitat for pollinators
Asters

pepperbutt Beautiful day to pollinate, loving my new phone #nofilter #samsung #galaxy5 #bees #asters
Asters
Arnicas

- Leaves are opposite
- Large, yellow, radiate flower heads
- Well-developed disk and ray flowers
Tahoe Varietals

• Heartleaf arnica (Arnica cordifolia)
• Seep-spring arnica (Arnica longifolia)
• Soft arnica (Arnica mollis)
• Sierra arnica (Arnica nevadensis)
• Nodding arnica (Arnica parryi)
• Meadow arnica (Arnica chamissonis)
• Mountain arnica (Arnica latifolia)
Asteraceae (Sunflower Family)

Patterns of the Aster or Sunflower Family

Plants of the Aster family are “composites” of many small flowers in a disk-like flowerhead.

Asters are often easy to recognize from a distance.

A Typical Disk Flower

- 5 stamens fused around pistil
- 5 petals fused together
- pappus hair (sepals)
- ovary

Even the “petals” are individual flowers.

Each seed is produced by a single tiny flower.

Multiple layers of bracts are common.

Arnica

Dandelion
Arnica nevadensis

- Sierra Arnica: 6 in. - 12 in., 6-15 ray flowers
- 2-3 pairs of rounded, untoothed leaves
- 1-3 flowerheads
- White – cream colored pappus
- Mid-season
- Up to 10,000 ft
- Semi-moist forest openings or rocky slopes
Arnica longifolia

- Seep-spring Arnica: 10 in. – 30 in., 8-13 ray flowers, 5-7 pairs of lancelolate leaves
- Stiff hairs
- Large clumps with many heads
- Acute bracts
- Mid-season
- Wet areas
- 7000-8000’
Arnica parryi

- Nodding Arnica
- 6 in – 24 in
- Green, sparsely hairy leaves, upper leaves reduced
- Buds nod prior to blooming
- Mid-season
- Moist meadows, stream margins
- 8000’ - 9500’
Arnica cordifolia

- Heartleaf Arnica
- 6 in - 12 in
- 10-15 ray flowers with pointed tips
- 2-5 pairs of toothed, heart-shaped leaves with chordate basal clusters
- Early to mid-season
- Dry forest openings
- Up to 8000’
Arnica mollis

- Soft Arnica
- 8-24 in.
- 3-5 pairs of soft, hairy, untoothed leaves
- 1-3 large hemispheric heads
- Yellow-brown pappus
- Moist meadows, stream margins
- Mid-season
- 8000’ - 9500’
Why plant Arnica?

- Aesthetics
- Native Plant
- Beneficial to local environment
- Beneficial to you!
History

- Arnica has been used for medical purposes since the 1500s
- Commonly used to treat sprains, inflammation, and bruises
Arnica Studies

• Treatment
  – Inflammatory diseases
  – Rheumatic diseases
  – Epilepsy and seasickness
  – Edema and ecchymosis

• Anti-carcinogenic

• Prevention of pain and bruising

• Soothe Muscle Aches
The Science of Arnica

- *Arnica montana*
- Sesquiterpenoids Lactones
- Helenalin and 11alpha, 13-dihydrohelenalin type
Usable Arnica

- **Tincture**: concentrated herbal extract typically utilizing alcohol as the solvent
- **Salve**: an ointment used to promote healing of the skin or as protection
Collecting

- Plant in garden
- Collect when most beneficial
- Spread out picking of leaves and flowers
- Pinch off the flower
- Check all angles
- Don’t pull out the full plant

Source: Slide from Bree Lewis
Harvesting

• Permit from USFS
• Avoid and protect the unusual or threatened
• We don’t want another Arnica montana situation
• Follow the abundance
• Gather in small, thoughtful numbers
• Know where (and where not to harvest)
• Assess for environmental toxins
• Know your plant ID

Source: http://sierrabotanica.com/2015/01/safe-ethical-guidelines-for-wildcrafting/
Topical Herbal Remedy

• No consensus exists on topical dosage
• Absorption depends on concentration and preparation
• Salves typically contain 20-25%
Salves

• Ointment, balm, cream, emollient, unguent
• Simple
• Effective
• Portability
• Cleaner application
• Absorption
Tools Needed

- A double boiler, crock pot, mason jars
- Cheesecloth, old cotton t-shirt or cotton pillowcase
- Large bowl
- Containers
- Stirrer
Warming Salve

• 16 ounces coconut oil
• 1 ounce dried arnica flowers
• 7 grams dried cayenne powder
• 7 grams ginger root powder
• 7 grams turmeric root powder
• ½ teaspoon rosemary oil
• ¼ cup beeswax granules (scant)
Cooling Salve

- 16 ounces coconut oil
- 1 ounce dried arnica flowers
- 1 cup beeswax granules
- ½ tsp. peppermint essential oil
- ½ tsp. lavender essential oil
Directions

• Oil infusion: solar, double boiler, slow cooker
• Strain the herbs from the oil
• In a double boiler or slow cooker combine beeswax and infused oil. Remove from heat once the beeswax is melted
• Add essential oils
• Allow for cooling
• Pour salve into jars, tins, or some other containers to cool and harden
• Store in a cool dark place when not in use.
• A small dab (a little bit goes a long way!), massage into sore achy muscles and joints.
Precautions

• Never orally without direct medical supervision
• May irritate skin after prolonged use
• Should not be used on broken skin
• Allergies
• Avoid if pregnant or breastfeeding
• Keep out of the reach of children
• Avoid use around face and other mucosal membranes
Ginger (Zingiber officinale)

- Good for arthritis and muscle pain
- Anti-inflammatory
- Improve circulation and relieve tension in tired muscles

Source: https://theherbalacademy.com/warming-ginger-cayenne-salve-for-natural-pain-relief/
Tumeric (Cucuma longa)

- Curcumin
- Helps to ease muscle pain
- Arthritis and joint inflammation

Sources: https://theherbalacademy.com/warming-ginger-cayenne-salve-for-natural-pain-relief/

(Kunchandy 1990)
Cayenne (Capsicum)

A circulatory stimulant and has been used in salves for healing infections, shingles, rheumatoid arthritis, and osteoarthritis.

Source: http://healthimpactnews.com/2012/pain-relieving-coconut-oil-arnica-salve-recipe/
Rosemary (Rosemarinus)

- Analgesic
- Antioxidant
- Antimicrobial
- Anti-carcinogenic

Peppermint (*Mentha x piperita*)

- Anti-bacterial, aids indigestion muscle pain, nerve pain
- Also great cooling effect

Lavender (Lavandula)

- Analgesic
- Antioxidant
- Holistic approach to depression
- Sleep aid
- Relaxant

Other Spices or Essential Oils

• Eucalyptus has analgesic, antioxidant and antimicrobial actions
• Cinnamon and clove have warming properties
• The other ingredients in the salves are essential oils, which can be adjusted to suit your own preferences.
• You don’t need to add anything
Beeswax

- Anti-inflammatory
- Anti-bacterial
- Anti-viral
- 100% Natural


Why make your own?

• Petroleum jelly and mineral oil are petroleum-based products
• Petroleum-based products can be harmful to your body
• Petroleum products are constantly being scrutinized and studied
• Found in many commercially available cosmetic or arnica products
Tincture

- Typically an alcoholic extract of a plant
- Efficient and quick-acting
- Quickest and easiest method
Fresh Tincture

• The standard ratio for fresh plant tincturing is 1:2 meaning -1 part herb/plant and 2 parts menstruum.

• The menstruum in this ratio is vodka. Make sure your final alcohol content is 20% of the total liquid volume.
Conclusion

• Gardens are good
• Plant native Asters like Arnica
• Effective at attracting native pollinators
• Low maintenance
• Less resources
• Benefits at home? You tell me!
Upcoming TALKS AND lectures

- Dandelions, Weed or Feed?- 8/13 TCDG 10am or 8/17 TDG 5:30pm
- Transforming Transportation, Finally: How Three Transportation Revolutions Are Starting to Disrupt Transportation As We Know It- 8/11 TERC 5:30 pm
- Children’s Environmental Science Day- 8/20 Commons Beach 1pm
- Science of Wine- 8/24 TERC 5:30pm
- Science of Gratitude- 9/1 TERC 5:30pm
- Innovation in the US: Myths and Realities- 9/15 TERC 5:30pm
- A Gut Feeling: How Intestinal Microbes Modulate Mood and Behavior- 9/22 TERC 5:30pm
Sources

More Sources


Questions??

• Full PowerPoint Presentation available online
  • http://tahoe.ucdavis.edu/ed-outreach/eriksson/garden.html

• Questions later? antoy@ucdavis.edu