

Oregon Department of Agriculture  
Plant Pest Risk Assessment for  
*Echium pininana*  
Drafted in 2013; updated in 2022  
Compiled by: Carri Pirosko

Name: Tower of Jewels or Pine Echium, *Echium pininana*  
Family: Boraginaceae

**Findings of this review and assessment:** *Echium pininana* has been determined to be a category of a “B” listed noxious weed as defined by the Oregon Department of Agriculture (ODA) Noxious Weed Policy and Classification System. This determination is based on two independent risk assessments following a literature review. Using a rating system adapted from United States Department of Agriculture, Animal and Plant Health Inspection Services, Plant Protection and Quarantine (USDA-APHIS PPQ) Weed Risk Assessment Guidelines, tower of jewels scored 44 out of a potential score of 90, indicating a “B” listing. Using the ODA Noxious Weed Rating system, the species scored 14 indicating a “B” listing.

**Introduction:**

*An original Risk Assessment for E. pininana was written in 2013. At that time, E. pininana was added to the ODA’s internal “Watch List”. Utilizing new information as to the spread of E. pininana on the south coast, the Risk Assessment was revisited and updated in 2022.*

*E. pininana* is an unusual and striking plant in the Borage Family. It is a biennial or triennial, flowering once and then dying. It produces a single, massive spire of light blue to purple flowers reaching approximately 15 feet in height and prized by garden enthusiasts for its unique leaves, shape, and flowering stalk. This Echium forms hybrids easily with other Echium species (Robinson). *E. pininana* escaped cultivation as an ornamental and has become naturalized in several coastal counties in California (Warner; CalFlora; Hubbart; Crooker). Natural Resource Managers in California have noted that *E. pininana* has many of the adaptability characteristics of invasive plants. *E. pininana* grows rapidly, is cross pollinated, and produces seeds prolifically, which germinate readily; dense carpets of seedlings are commonplace. An internet search found evidence of this species in cultivation in Washington, although reports of escaping populations have not been found.

**Native Range:** *E. pininana* is native to the Canary Islands where it grows on the stony hill sides and laurel forests and tall heath shrublands at 600-1000 m elevation (DiTomaso). In its native range, *E. pininana* is an endangered species through loss of habitat to agriculture. It has naturalized in some mild coastal areas of Ireland and California.

**Reproductive traits:**

*E. pininana* is cross pollinated and forms hybrids easily with other Echium species (The New Royal Horticultural Society Dictionary of Gardening). Within stands of *E. pininana*, there is considerable variation among plants, both in the color of the flowers (blue to purple) and in the maximum height of the plant when fully grown, usually 2m to over 6m (Robinson).



Photo, Left: Close-up of *Echium pininana* flowers

Photo, Right: A single plant removed from the fairgrounds in Gold Beach  
(Photo Credit: Erin Minster, Curry SWCD)

### **Growth Habits, Reproduction, and Spread:**

Pine echium [*Echium pininana* Webb & Berth.] is an herbaceous plant up to 5.5 m tall that has escaped cultivation as an ornamental in some coastal areas. *E. pininana* typically exists as a vegetative rosette for two-three years, flowers once, and then dies (monocarpic). Flowers are light blue to purple. In addition, leaves are mostly broadly lanceolate, 50+ cm long, 6-10 cm wide, and covered with flattened, soft to bristly, sometimes papillae-based hairs (DiTomaso; Standley).

In the second or third year from germination a plant will start the flowering process. Plants reportedly can produce flowers from spring through fall. Usually robust plants that have grown well in the early winter will flower during the following year. This does not always occur and plants may remain vegetative for a further year. Occasionally small plants will send up a weak flowering shoot (Robinson).

*E. pininana*'s main mode of reproduction is by copious seed production, in excess of 200,000/plant which germinate readily resulting in dense carpets of seedlings (Robinson). Standley reports stem diameters of approximately 3 inches on robust rosettes and has seen injured stems sprout multiple new branches (Pers. Comm., 2013).

One online site boasted: "Should your Echiums (pininana) flower, you will be presented with plenty of seed. The seedlings will begin appearing all over the garden. They can easily be transplanted from an inappropriate location to a more suitable area." The website continued on to report: "One way to increase the amount of self-seeded plants is to add the flower spike to the compost heap. As the compost is added to the garden, new plants will keep popping up year after year saving you the need to propagate in the greenhouse. The flower spike can also be put through the garden shredder. The resulting pile of dust can be sprinkled in areas you wish to create colonies. Just rake the soil over in spring and they will do everything else for you." (<http://www.cooltropicalplants.com/Echium-pininana.html>).

**Probability of detection:** Detection is not a concern due to the size and distinct nature of this species. Systematic survey in the infested areas, in addition to a coastal outreach campaign, would likely be quite successful.

**Establishment and competitive ability:**

One California Natural Resource Manager (Warner) has worked on *E. pininana* removal at Milagra Ridge in Golden Gate National Recreation Area (GGNRA), where he has seen this species thriving as a short-lived perennial in coastal scrub. Other Restoration Managers from the GGNRA report that *E. Pininana* is able to outcompete native vegetation, primarily in drainage ditches (Crooker). In other coastal California counties (Marin, Mendocino, San Mateo, and Sonoma), *E. pininana* is seen as a local escape from horticultural plantings, although it does spread into adjacent coastal scrub and along borders of marshes and woodlands. Tim Hyland with CA State Parks has watched this species over the years along the coast in Santa Cruz County and reports that: *E. pininana* populations remain localized, but persistent. Partners in WA state find this species particularly in ornamental gardens and in private landscapes. Some gardeners in WA state have observed seedlings of *E. pininana* persisting during milder winters (Washington State Department of Agriculture, Pest Program).

**Known Distribution in Oregon:**

As of January 2022, no *E. pininana* populations have been detected or reported north of Coos Bay. Invasive weed partners charged with managing lands in Lane, Lincoln, Tillamook, and Clatsop Counties were unfamiliar with this species (OPRD Natural Resource Specialists, Lincoln County Weed Control District/ Mid-Coast CWMA, and the Western Invasives Network).

**Coos County**

***Cape Arago Highway***

In 2012, the first escaped site of *E. pininana* was reported to ODA by Jeanne Standley, the OR-WA State Weed Coordinator with BLM (now retired). Standley reported many escaped rosettes of *Echium pininana* along the Cape Arago Highway, a right-of-way that connects Coos Bay with Charleston Bay. Escaped plants were in the beginning stages of invading a wooded opening down off of the highway. Standley traced the escaped *E. pininana* plants along the highway to several nearby yards. One homeowner reported that five years prior, a neighbor had soil delivered that was contaminated with seeds that grew up out of the fill, produced a flowering stalk and seeded their yards. Since it was such an interesting and prolific plant the homeowner dug-up rosettes and shared them with neighbors. The homeowner now regrets that decision, as she vigilantly weeds out the pesky tower-of-jewels plants, as neighbors complained about the spread into their yards.



*BLM's Jeanne Standley with cut stems of E. pininana moving into a wooded area off of the Cape Arago Highway between Coos Bay and Charleston Bay, Coos County, Oregon. These "rosettes" are perched on a leafless stem with total height of 9 feet. Photos taken by Carri Pirosko, ODA Plant Program.*

### ***Coos Bay/ North Bend***

In 2013, ODA Natural Resource Specialist, Carri Pirosko, and Standley conducted neighborhood surveys and homeowner interviews and discovered what is believed to be the primary source of *E. pininana* in Coos Bay. A couple brought back seed from Santa Cruz, California to plant in their backyard and had been sharing seeds and potted plants with interested passers-by.



*Jeanne Standley (BLM) standing beside E. pininana plants found in what is believed to be the*

source yard in downtown Coos Bay, Coos County, Oregon. Photo taken by Carri Pirosko, ODA Plant Program.

### Curry County

ODA Natural Resource Specialist, Carri Pirosko, and Curry SWCD have documented five escaped populations along Highway 101 and at least one escaped population into a coastal drainage NW of Brookings. *Echium pininana* can be found in many yards in Brookings and Gold Beach, as well as at the Gold Beach fairgrounds (Pers. Comm., January 2022, Curry SWCD).

Plant sharing on the south coast is “definitely a problem”, as *E. pininana* has been seen in yards from Gold Beach south to the Hunter Creek area (Pers. Comm., January 2022: OSU Extension, N. Kline and Curry SWCD).

Another potential source for plants elsewhere in Coos and Curry counties could be seed sharing by a nursery in Bandon where the nursery owner obtains *E. pininana* seeds from overseas and grows a limited number on site (BLM, Pers. Comm., January 2022, G. Warnke). There are no known escaped populations from sales of plants at this nursery. Reports of limited seed sharing by homeowners in Gold Beach and Brookings have also been reported (Pers. Comm., January 2022, OSU Extension, N. Kline).



Photos: Escaped *E. pininana* sites along Highway 101 in between Brookings and Gold Beach in Curry County, Oregon. (Photo Credit: Erin Minster, Curry SWCD)

### Distribution in Other West-Coast States

#### California:

*E. pininana* is known to occur along the coastal strand in five coastal Counties in central California. This species is not listed as a noxious weed by the California Department of Food

and Agriculture. The last time *E. pininana* was evaluated by the California Invasive Plant Council, it was considered for their “watch list”; as this species was considered only a moderate risk due to a worldwide distribution that was not well-matched to CA climate.

### Distribution in California by County:



- There are **specimen** records from this county in an herbarium.
- There are **documented** records, vouchered or confirmed by an expert.
- There are **reported** records.
- There are reported records available indirectly (eg. in botanical **literature**)

An internet search found evidence of this species in cultivation in Washington (Lake Tapps outside of Auburn, WA according to Seattle Times news article and Miller Garden and Daniel Sparler’s Seward Park Garden in greater Seattle area according to communication with Sasha Shaw of the King County Noxious Weed Control Board), although reports of escaping populations have not been found (Sasha Shaw, pers. comm. 2013).

### Washington

Washington has not listed *E. pininana* as a noxious weed or as a “monitor list” species. There are a few documented observations of *E. pininana* in iNaturalist in King County. *E. pininana* is not common in WA State, but could be found occasionally, in western WA landscapes (WA State Dept. of Agriculture’s Pest Program).

**Hardiness zones:** *E. pininana* can thrive along the coast in 9-10 hardiness zones. See appendix 1. *E. pininana*, is not completely hardy and is not likely to grow well away from milder coastal areas (Robinson; Warner).

Standley (BLM, Pers. Comm. 2013) noted die-back of rosettes in North Bend (Coos County) following a cold snap, but plants recovered and put on new growth within the same season. On average, it does get down to freezing for a day or two along the Oregon Coast in the winter. Standley suspects that *E. pininana* can thrive on the Oregon coast. Some gardeners in WA state have observed seedlings of *E. pininana* persisting during milder winters (Washington State Department of Agriculture, Pest Program).

Irish researchers are testing the hypothesis that natural selection from cold stress has over time produced a more cold-hardy strain of *E. pininana* that is better adapted to cultivation in Ireland

(Robinson).

**Positive Economic Impact:** *E. Pininana* is not known to be sold widely in the nursery trade in Oregon (ODA Nursery Program, Pers. Comm. January 2022). The Oregon Association of Nurseries producers guide listed no growers of *E. pininana* in Oregon (Lord, C. Pers. Comm., January 2022). A nursery in Bandon discontinued selling this species after a conversation in 2013 about its potential threat to coastal habitats (Pers. Comm., 2013, Pirosko, ODA), but reports of seed being shared (not sold) to nursery customers that ask was reported from 2021 (pers. Comm., January 2022, G. Warnke, BLM). Plant seeds are widely available for purchase on the internet.

**Negative Economic Impact:** The potential economic impact is difficult to estimate. In California *E. pininana* has naturalized and has invaded coastal scrub and borders of marshes and woodlands (Warner, Pers. Comm 2013). Along drainages it is spreading and able to outcompete native vegetation (Crooker, Pers. Comm 2013). It has become a pest along roadways (namely Highway 101) and in natural coastal drainages and waste areas. The majority of economic cost would be attributed to control efforts. Further movement of *E. pininana* in the state would likely result in more seed sharing amongst unsuspecting garden enthusiasts. This has become a problem in California and Oregon where citizens are intentionally spreading seed of *E. pininana* into natural areas (Pers. Comm., January 2022: Crooker; OSU Extension and Curry SWCD).

**Ecological Impacts:** Escaping from gardens or areas where it was dumped as garden waste, *E. pininana* has the potential to aggressively colonize. It is growing in shaded roadside forest to full sun sites where a dense carpet of seedlings was observed in Coos Bay. Two BLM Areas of Critical Environmental Concern (North Spit and New River) are at potential risk of invasion. If *E. pininana* should be allowed to escape further, it is unknown if this non-native species would become a source of food for native insects/birds. Little is documented in cited literature about the ecology or invasiveness of this species.

A video from Half Moon Bay, CA shows a dense infestation with little other vegetation obvious. Natural Resource Manager (Alvarez, Pers. Comm. January 2022) at the Golden Gate National Recreation Area (GGNRA) reports that *E. Pininana* gets out of hand quickly and is really difficult to “rein-in” due to steep terrain; control is particularly hampered when *E. pininana* is mixed in amongst other shrubs. Others in California’s Bay Area have watched this species for 25 years and believe that while *E. pininana* warrants attention, it lacks a good seed distribution mechanism; seeds tend to drop to the ground and spread incrementally (Sigg, J., Pers. Comm. 2013).

**Control:** Control in Oregon is in the very early stages. Methods used in Oregon to date: (1) hand removal of young seedlings and rosettes and (2) spring mechanical lopping (with gloves) of larger stemmed plants. Cutting of large stems in 2012 resulted in a multiple stem in 2013.

In California, manual removal and herbicide applications have been successful. Small plants are pulled and larger plants are cut at the base in the hotter summer months with no resprouting seen (Warner). Hand grubbing/pulling was found to be effective, but results in soil disturbance allowing secondary invaders to colonize (Crooker, Pers. Comm. 2013). It should be noted that *E. pininana* leaves and stems are densely covered with stiff “hairs” that pierce skin and fabrics (BLM, Standley, Pers. Comm. 2013). Spring applications to basal rosettes with a 1.5% solution of glyphosate achieved 100% control (Crooker, Pers. Comm. 2013). It is suspected that cut stem treatments with glyphosate would be effective as well.

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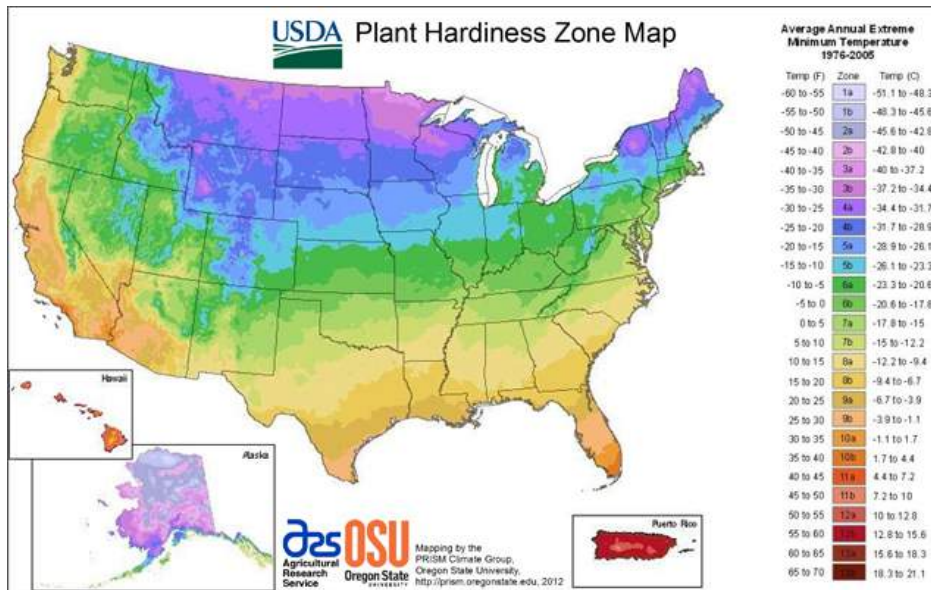
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Appendix 1



## Noxious Weed Qualitative Risk Assessment

### Oregon Department of Agriculture

Common name: Tower of Jewels  
 Family: Borage  
 Scientific name: *Echium pininana*

For use with plant species that occur or may occur in Oregon to determine the potential to become serious noxious weeds. For each of the following categories, select the number that best applies. Numerical values are weighted to increase the value of important factors over less important ones. Choose the best number that applies, intermediate scores can be used.

**Total Score: 44**      **Risk Category: B**

#### GEOGRAPHICAL INFORMATION

1. (5) **Invasive in other areas**
- 0 Low- not known to be invasive elsewhere
  - 2 Known to be invasive in climates dissimilar to Oregon's current climates.
  - 5 **Known to be invasive in geographically similar areas.**

Comments: Known to be invasive along central CA coast, continuing to spread. Documented as an invasive along coasts in Ireland.

2. (3) **Habitat availability:** Are there susceptible habitats for this species and how common or widespread are they in Oregon?
- 1 *Low* – Habitat is very limited, usually restricted to a small watershed or part of a watershed (e.g., tree fern in southern Curry County).

- 3 *Medium* – Habitat encompasses 1/4 or less of Oregon (e.g., oak woodlands, coastal dunes, eastern Oregon wetlands, Columbia Gorge).
- 6 *High* – Habitat covers large regions or multiple counties, or is limited to a few locations of high economic or ecological value (e.g., threatened and endangered species habitat).

Comments: Potential habitat along Oregon's coastline. A potential pest in private homeowner's yards, along coastal highways, and waste areas. Potential threat to native vegetation: coastal scrub, drainages, edges of marshlands and woodlands.

**3. (0) Proximity to Oregon:** What is the current distribution of the species?

0 *Present* – Occurs within Oregon.

- 1 *Distant* – Occurs only in distant US regions or foreign countries.
- 3 *Regional* – Occurs in Western regions of US but not adjacent to Oregon border.
- 6 *Adjacent* – Weedy populations occur adjacent (<50 miles) to Oregon border.

Comments: Only known to occur in limited distribution in Coos and Curry Counties on the southern coast in OR. Very few documented populations escaped from yards/landscaped homes.

**4. (8) Current distribution:** What is the current distribution of escaped populations in Oregon?

- 0 *Not present* – Not known to occur in Oregon.
- 1 *Widespread* – Throughout much of Oregon (e.g., cheatgrass).
- 5 *Regional* – Abundant (i.e., occurs in eastern, western, central, coastal, areas of Oregon) (e.g., gorse, tansy ragwort).
- 8 *Limited* – Limited to one or a few infestations in state (e.g., kudzu).

Comments: Very limited, considered an EDRR species. Only known to occur in North Bend and Coos Bay (7 yards and 3 plants along the Cape Arago Highway. More survey is needed of other coastal counties, as well as in Coos County.

#### BIOLOGICAL INFORMATION

**5. (2) Environmental factors:** Do abiotic (non-living) factors in the environment effect establishment and spread of the species? (e.g., precipitation, drought, temperature, nutrient availability, soil type, slope, aspect, soil moisture, standing or moving water).

- 1 *Low* – Severely confined by abiotic factors.
- 2 *Medium* – Moderately confined by environmental factors
- 4 *High* – Highly adapted to a variety of environmental conditions (e.g., tansy ragwort, Scotch broom).

Comments: Limited information about abiotic factors in the literature; based on personal communications with CA Natural Resource Managers.

**6. (5) Reproductive traits:** How does this species reproduce? Traits that may allow rapid population increase both on and off site.

- 0 *Negligible* – Not self-fertile, or is dioecious and opposite sex not present.
- 1 *Low* – Reproduction is only by seed, produces few seeds, or seed viability and longevity are low.

- 3 *Medium* – Reproduction is vegetative (e.g., by root fragments, rhizomes, bulbs, stolons).
- 3 *Medium* – Produces many seeds, and/or seeds of short longevity (< 5 years).
- 5 *High* – Produces many seeds and/or seeds of moderate longevity (5-10 years) (e.g., tansy ragwort).
- 6 *Very high* – Has two or more reproductive traits (e.g., seeds are long-lived >10 years and spreads by rhizomes).

Comments: Plants reproduce via copious seed production and to a lesser extent resprouting from cut surfaces (one 3” stem cut and following season results in three 1” stems). Seed longevity is unknown at this time.

7. (2) **Biological factors:** Do biotic (living) factors restrict or aid establishment and spread of the species? (What is the interaction of plant competition, natural enemies, native herbivores, pollinators, and pathogens with species?)
- 0 *Negligible* – Host plant not present for parasitic species.
  - 1 *Low* – Biotic factors highly suppress reproduction or heavily damage plant for an extended period (e.g., biocontrol agent on tansy ragwort).
  - 2 *Medium* – Biotic factors partially restrict or moderately impact growth and reproduction, impacts sporadic or short-lived.
  - 4 *High* – Few biotic interactions restrict growth and reproduction. Species expresses full growth and reproductive potential.

Comments: No herbivory observed, no biocontrols present. Very little documented on this species as it relates to biotic factors.

8. (3) **Reproductive potential and spread after establishment - Non-human factors:** How well can the species spread by natural means?
- 0 *Negligible* – No potential for natural spread in Oregon (e.g., ornamental plants outside of climate zone).
  - 1 *Low* – Low potential for local spread within a year, has moderate reproductive potential or some mobility of propagules (e.g., propagules transported locally by animals, water movement in lakes or ponds, not wind blown).
  - 3 *Medium* - Moderate potential for natural spread with either high reproductive potential or highly mobile propagules (e.g., propagules spread by moving water, or dispersed over longer distances by animals) (e.g., perennial pepperweed)
  - 5 *High* – Potential for rapid natural spread throughout the susceptible range, high reproductive capacity and highly mobile propagules. Seeds are wind dispersed over large areas (e.g., rush skeletonweed)

Comments: Concern is movement via copious seed production and movement along Cape Arago Highway and Highway 101 through and north of Curry County.

9. (3) **Potential of species to be spread by humans.** What human activities contribute to spread of species? Examples include: interstate or international commerce; contaminated commodities; packing materials or products; vehicles, boats, or equipment movement; logging or farming; road maintenance; intentional introductions of ornamental and horticultural species, or biofuel production.

- 1 *Low* – Potential for introduction or movement minimal (e.g., species not traded or sold, or species not found in agricultural commodities, gravel or other commercial products).
- 3 *Medium* – Potential for introduction or off-site movement moderate (e.g., not widely propagated, not highly popular, with limited market potential; may be a localized contaminant of gravel, landscape products, or other commercial products) (e.g., lesser celandine, Canada thistle).
- 5 *High* – Potential to be introduced or moved within state high (e.g., species widely propagated and sold; propagules common contaminant of agricultural commodities or commercial products; high potential for movement by contaminated vehicles and equipment, or by recreational activities) (e.g., butterfly bush, spotted knapweed, Eurasian watermilfoil).

Comments: Biggest concern is movement locally in Coos and Curry Counties via garden enthusiasts (reason for spread in CA and OR).

#### IMPACT INFORMATION

- 10. (5) Economic impact:** What impact does/can the species have on Oregon's agriculture and economy?
- 0 *Negligible* – Causes few, if any, economic impacts.
  - 1 *Low* - Potential to, or causes low economic impact to agriculture; may impact urban areas (e.g., puncture vine, pokeweed).
  - 5 *Medium* – Potential to, or causes moderate impacts to urban areas, right-of-way maintenance, property values, recreational activities, reduces rangeland productivity (e.g., English ivy, Himalayan blackberry, cheatgrass).
  - 10 *High* – Potential to, or causes high impacts in agricultural, livestock, fisheries, or timber production by reducing yield, commodity value, or increasing production costs (e.g., gorse, rush skeleton weed, leafy spurge).

Comments: *E. pininana* is a very tall plant that would be a hazard along rights of way and thus result in maintenance; could potentially impact coastal homeowner's property values; most economic concerns would be related to control needed to protect natural habitats infested with this copious weeding species.

- 11. (5) Environmental Impact:** What risks or harm to the environment does this species pose? Plant may cause negative impacts on ecosystem function, structure, and biodiversity of plant or fish and wildlife habitat; may put desired species at risk.
- 0 *Negligible* – None of the above impacts probable.
  - 1 *Low* – Can or does cause few or minor environmental impacts, or impacts occur in degraded or highly disturbed habitats.
  - 4 *Medium* – Species can or does cause moderate impacts in less critical habitats (e.g., urban areas, sagebrush/ juniper stands).
  - 6 *High* – Species can or does cause significant impacts in several of the above categories. Plant causes severe impacts to limited or priority habitats (e.g., aquatic, riparian zones, salt marsh; or T&E species sites).

Comments: Could result in reductions in species richness where infestations are large and dense in valued coastal marshland and scrublands.

12. (0) **Impact on Health:** What is the impact of this species on human, animal, and livestock health? (e.g., poisonous if ingested, contact dermatitis, acute and chronic toxicity to livestock, toxic sap, injurious spines or prickles, causes allergy symptoms)
- 0 *Negligible* – Has no impact on human or animal health.
  - 2 *Low* – May cause minor health problems of short duration, minor allergy symptoms (e.g., leafy spurge)
  - 4 *Medium* – May cause severe allergy problems, death or severe health problems through chronic toxicity, spines or toxic sap may cause significant injury. (e.g., giant hogweed, tansy ragwort).
  - 6 *High* – Causes death from ingestion of small amounts, acute toxicity (e.g. poison hemlock)

Comments: No known impact on health, other than skin irritation from stiff, fine hairs if control conducted without proper gloves.

#### CONTROL INFORMATION

13. (1) **Probability of detection at point of introduction:** How likely is detection of species after introduction and naturalization in Oregon?
- 1 *Low* – Grows where probability of early detection is high, showy and easily recognized by public; access to habitat not restricted (e.g., giant hogweed).
  - 5 *Medium* – Easily identified by weed professionals, ranchers, botanists; some survey and detection infrastructure in place. General public may not recognize or report species (e.g., leafy spurge).
  - 10 *High* – Probability of initial detection by weed professionals low. Plant shape and form obscure, not showy for much of growing season, introduction probable at remote locations with limited access (e.g., weedy grasses, hawkweeds, skeletonweed).

Comments: Height and unique nature of this species would certainly be easily detected.

14. (2) **Control efficacy:** What level of control of this species can be expected with proper timing, herbicides, equipment, and biological control agents?
- 1 *Negligible* – Easily controlled by common non-chemical control measures (e.g., mowing, tillage, pulling, and cutting; biocontrol is very effective at reducing seed production and plant density) (e.g., tansy ragwort).
  - 2 *Low* – Somewhat difficult to control, generally requires herbicide treatment (e.g., mechanical control measures effective at preventing flowering and but not reducing plant density; herbicide applications provide a high rate of control in a single application; biocontrol provides partial control).
  - 4 *Medium* – Treatment options marginally effective or costly. Tillage and mowing increase plant density (e.g., causes tillering, rapid regrowth, spread from root fragments). Chemical control is marginally effective. Crop damage occurs or significant non-target impacts result from maximum control rates. Biocontrol agents ineffective.
  - 6 *High* – No effective treatments known or control costs very expensive. Species may occur in large water bodies or river systems where containment and complete control are not achievable.

Comments: Reports from Natural Resource Managers in CA are that mechanical and herbicide treatments are effective.

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Category Scores:

16 Geographic score (Add scores 1-4)

12 Biological Score (Add lines 5-8)

13 Impact Score (Add lines 9-11)

3 Control Score (Add Lines 12-14)

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44 **Total Score** (Add scores 1-14 and list on front of form)

**Risk Category:**      55-90 = **A**      24-54 = **B**      < 24 = unlisted.

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This Risk Assessment was modified by ODA from the USDA-APHIS Risk Assessment for the introduction of new plant species  
Vers. 3.6    12/2/2010

Oregon Department of Agriculture  
Noxious Weed Rating System

Common Name: Tower of Jewels

Scientific Name: *Echium pininana*

Points Category:

1.   2   Detrimental Effects: **Circle all that apply, enter number of circles.**
  1. **Health:** causes poisoning or injury to humans or animals
  2. **Competition:** strongly competitive with crops, forage, or native flora
  3. **Host:** host of pathogens and/or pests of crops or forage
  4. **Contamination:** causes economic loss as a contaminate in seeds and/or feeds
  5. **Interference:** interferes with recreation, transportation, harvest, land value, or wildlife and livestock movement
  
2.   2   Reproduction & Capacity for Spread: **Circle the number that best describes, enter that number.**
  1. Few seeds, not wind blown, spreads slowly
  2. Many seeds, slow spread
  3. Many seeds, spreads quickly by vehicles or animals
  4. Windblown seed, or spreading rhizomes, or water borne
  5. Many wind-blown seeds, high seed longevity, spreading rhizomes, perennials
  
3.   2   Difficulty to Control: **Circle the number that best describes, enter that number.**

1. Easily controlled with tillage or by competitive plants
2. Requires moderate control, tillage, competition or herbicides
3. Herbicides generally required, or intensive management practices
4. Intensive management generally gives marginal control
5. No management works well, spreading out of control

4. 6 Distribution: Circle the number that best describes, enter that number.

1. Widely distributed throughout the state in susceptible habitat
2. Regionally abundant, 5 or more counties, more than 1/2 of a county
3. Abundant throughout 1- 4 counties, or 1/4 of a county, or several watersheds
4. Contained in only 1 watershed, or less than 5 square miles gross infestation
5. Isolated infestation less than 640 acres, more than 10 acres
6. Occurs in less than 10 acres, or not present, but imminent from adjacent state

5. 2 Ecological Impact: Circle the number that best describes, enter that number.

1. Occurs in most disturbed habitats with little competition
2. Occurs in disturbed habitats with competition
3. Invades undisturbed habitats and crowds out native species
4. Invades restricted habitats (i.e. riparian) and crowds out native species

14 TOTAL POINTS

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**Note:** Noxious weeds are non-native plants with scores of 11 points or higher. Any plants in 4.1, 4.2, and 4.3 should not be classified as “A” rated weeds.

**Ratings:** 16 + = A, 15 – 11 = B

ODA Weed Rating System 2/4/11 V3.1

Assessment produced by: Alex Park Noxious Weed Control Program Oregon Department of Agriculture: December 2011  
Edited by: Glenn Miller ODA.

USDA, NRCS. 2011. *The PLANTS Database*, Version 3.5 (<http://plants.usda.gov>). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.