What's That Blooming Thing?

Pinus torreyana

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Master Gardener Class of 2020
**Pinus torreyana**

Family: Pinaceae  
Genus: Pinus  
Species: Pinus torreyana

**Common Names**
Torrey pine - Del Mar pine - Soledad pine  
Santa Rosa Island Torrey pine

**Native environment**
The Torrey pine, a California native, is the rarest pine in the United States with two natural populations:
-- Torrey Pines State Reserve (TPSR) low coastal bluffs in SD, only south CA coastal pine forest, approx. 7000 trees.
-- Santa Rosa Island, 175 miles NW, off CA, mixed woodland of CA scrub oak, approx. 2000 trees.

Mainland/island populations thought to be separate subspecies:  
*Pinus torreyana* spp *torreyanna* (TPSR)  
*Pinus torreyana* spp *insularis* (Santa Rosa Island)

**Cultivated Environment**
-- Planted as a landscape ornamental in coastal southern CA and as a commercial species in Kenya, Australia and New Zealand.
Pinus torreyana

Varied Growth Habit

Photo credit: Herb Knufken | Wind battered tree at Torrey Pines State Reserve | December 2015
**Pinus torreyana**

**Some terms used to describe the Torrey pine**

- **fascicle** – cluster or bundle of needles
- **stratification** – subjecting seeds to cold to encourage germination, recommended for Torrey pine
- **strobilus** – reproductive structure
  -- male strobilus looks like a yellow bud
  -- female strobilus looks like a 1” red cone
- **monocious** -- having both male and female reproductive structures on the same plant
- **diploxyylon** -- two vascular bundles running through needles
- **gymnosperm** -- (naked seed) non-flowering plant, with seeds not enclosed within an ovary or fruit

**Growth Characteristics**

- Slow growing
- 25'-60' tall (usually around 40’)
  -- windy areas -- trees short and sculpted
  -- sheltered reach about 75'
  -- cultivated over 100'
- Can live around 150 years,
  -- tallest known -- planted in Carpinteria, CA in 1894 measured 126’ in 1993
- Rough, flaky bark, yellow wood
- Tap roots 25'
- Lateral roots up to 200'
- Shade tolerant
- Adapted to harsh environment of poor soils and little moisture. Maritime climate with low winter rainfall and frequent fog. It grows in open shallow, humus-poor soils.
**Pinus torreyana**

**Threats to survival...**

**Low genetic variability** -- results in the Torrey pines of TPSR having little capacity to respond to environmental changes, thus their fate as a wild species is uncertain.

**Air pollution** -- adjacent to densely populated areas, and easterly Santa Ana winds with high concentrations of ozone and other pollutants.

**Natural enemies** -- mites, scale insects and beetles -- 1988/1990 – five-spined engraver beetle (*Ips paraconfusus*) infestation at TPSR, killed over 1000 trees.

-- 1991 -- synthetic pheromones lured *Ips* beetles into traps, capturing 130,000 beetles in 9 weeks. Only 1 tree attacked after trapping.

**Rainfall** - average 10'-12'

-- Fog adds more precipitation
-- Grooves in needles channel dew and droplets to ground and roots
-- Too much water leads to root fungus
-- Given adequate rainfall, the tree's sap defends against the invading beetles by pushing eggs out or encasing the larvae in a coat of resin. Drought weakens the tree's defenses, allowing beetles to thrive and burrow through the cambium layer. The traps support the tree in its battle against the beetle

**Storms and salty winds**

**Fire**

-- Fire kills trees, but seed germination rate higher in burned area due to area sterilization and reduced competition.

-- Arson fire 1972, killed 93 mature trees

-- Controlled fires – 1978, 1984-85 killed 19 trees & 17 saplings

**Dead trees left in place**

**Protection...**

1952 – Made unlawful for any person to cut, injure or destroy any trees known as the *Pinus Torreyana* growing within the City of San Diego.  
- City of Del Mar extended protection to private property.
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Reproduction

-- Torrey pines begin to produce seed when 12-18 years old.
-- They regenerate sexually and do not reproduce naturally by vegetative methods.
-- Female strobili occur high in the tree.
-- Male strobili occur in the lower branches requiring the wind to carry the fine yellow pollen to the 1” conelets, taking approximately a year to completely pollinate the conelets.
-- Pollinated from January to March cones reach maturity in the summer, two and a half years later.
-- Seed dispersal begins in the autumn after cone maturity.
-- Exhibit delayed seed dispersal. Cones begin to open when seeds mature, but seed fall continues for up to 13 years after cone maturity. Some germination of seed may take place in the cone, unique to the Torrey pine in the genus *Pinus*. Seeds are nearly wingless. Cones remain on tree for at least 5 years and seeds can remain viable for 10 years.
-- Seeds are heavy with small wings and are dispersed by birds and other animals. Scrub Jays are responsible for a majority of dispersal and germination by forgetting where they buried the seeds!
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TPSR History
Kumeyaay (Native Americans of this area) utilized the Torrey pine nuts for consumption, pine pitch to repair cracks in pottery and needles to make baskets.

Prior to 1850 Torrey Pine trees called Soledad Pines, area known as “Punta de los Arboles” (Wooded Point), later as “Pine Hill”.
1850 - botanist Dr. C. C. Parry described the Soledad Pines, as a new species, Pinus torreyana
1890 - the Pueblo lands north of Old Town and including the Torrey Pine lands at the northern limits of San Diego, were leased for cattle and sheep grazing. Pines, manzanita, and other shrubs were cut and hauled away for fuel, and fires often swept over the tract.
1883-1912 - efforts to assure the protection of the Torrey Pines in the original Reserve area
1899 - 369 acres designated as Torrey Pines Park (presently over 1,500 acres)
1921 - Torres Pines Park renamed the Torrey Pines Reserve.
1959 – City of San Diego conveyed title for the Reserve to State Park system – area referred to as a “Scientific Reserve”.
1978 - TPSR dedicated as National Natural Landmark.
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References


Torrey Pines State Natural Preserve.
https://www.torreypine.org/

Torrey Pines Association
https://www.torreypines.org/

Nature Collective, Torrey Pine, Pinus torreyana
**Personal Torrey Propagation Experience**

*I'll try to sprout/grow anything!*

My Torrey pine was started from a seed purchased from the Boy Scouts many years ago. I don't remember exactly how I convinced it to sprout.

In the past, I've had minimal success in coaxing seeds from my tree to sprout. Holding the seed, while notching the hard shell to allow water to easily reach the kernel, drew blood every time.

Research indicated that they will not germinate, if not enough moisture is sensed passing by,
- first to open the hard nut
- and then to maintain root growth,
- almost like it had a water meter to measure available moisture.

For further nurturing of the germinated kernel, it was recommended to plant it in a tall, open bottomed container to allow the taproot to not be stopped by the bottom of the pot.

My Torrey
Personal Torrey Propagation Experience

Since all the seeds do not germinate at the same time, or ever, you're basically playing a waiting game. How long do you wait?

Having no open bottom pots, of any shape or size, I tried the suggestion of using paper towel cardboard tubes to later be planted, eventually decomposing. I found that if the soil medium was kept constantly moist, the cardboard began to soften and unroll, making it impossible to work with, if not immediately planted.

I finally devised a -too successful- method of coaxing and planting that ignores the lack of tall open pots, but has produced vigorous healthy looking Torreys.

I now have about 4 dozen Torreys, a year, weeks and days old!
Personal Torrey Propagation Experience

-My TOO Successful Method-

1 -- Drop the seeds to be germinated into water and toss the floaters, using only the sinkers.

2 -- Place a water soaked paper towel in a shallow flat bottom container, my choice -- the bottom of a plastic potato salad container.

3 -- Place the sinkers on the paper towel and cover with another wet towel, then with the container top, punch a couple holes in it to make a little greenhouse maternity ward. Do not let the towels dry out.

4 -- After roots appear, plant in containers – I repurposed plastic coffee cans after running out of similar sized pots.

Anyone need a *Pinus torreyana*?

My most recent birthing experience started with 23 sinkers, and over a month and a half period, 20 germinated, one rotted and 2 have yet to show any life.
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Neighborhood trees

Roots

More

Torrey Pine

TPSR

Pictures

Conelets

The Little Ones love the mist!