

**DRAFT: WRITTEN FINDINGS OF THE
WASHINGTON STATE NOXIOUS WEED CONTROL BOARD**

Scientific Name: *Carex pendula* Huds.

Synonyms: *Carex maxima* Scop.

Common Name: hanging sedge, pendulous sedge, drooping sedge, weeping sedge

Family: Cyperaceae

Legal Status: Being considered as a Class A noxious weed for 2021

Description and Variation:

Overall habit:

Hanging sedge is a large, evergreen, perennial sedge that grows in dense clumps in shaded, moist habitats. Leaves are long, medium green above and dull green to blue green below. Tall stems form long, hanging catkin-like spikes that develop seeds, which spread readily in water.



Images: left, hanging sedge plant with clumping growth habit; center, dull green underside of hanging sedge on left and topside of leaf on right; right, inflorescence of hanging sedge with drooping female spikes and a male spike at the tip. Images by Wendy DesCamp, WSNWCB.

Stems:

Hanging sedge's stems, called culms, grow 39.4 to 78.7 inches (100-200 cm) tall, triangle in cross section with rounded edges and smooth towards the tip (Stace 2010, Ball and Reznicek 2003). The stems are often spreading outward at an angle (Wilson et al. 2008).

Leaves:

The leaves are long and fairly wide, 31.5 to 51.2 inches long by 0.3 to 0.8+ inches wide (80 to 130 cm long by 8 to 20+ mm wide). Leaves are medium green above and undersides are green to blue – green, glaucous, and glabrous (Ball and Reznicek 2003).

Flowers and Fruits:

Hanging sedge's inflorescence is 7.9 inches to 3.3 feet (20-100 cm) long with a leaf-like bract at the base of the inflorescence 5.9 to 23.6 inches (15-60 cm) long (Ball and Reznicek 2003). The terminal spike is male and arching while the lateral spikes are female, drooping and cylindrical, commonly noted to be 6 inches long with overall measurements of 3.9 to 11.8+ inches by 0.20 to 0.31 inch wide (10 to 30+ cm long by 5 to 8 mm wide) (Wilson et al. 2008, Ball and Reznicek 2003).

The perigynia, scale-like bract enclosing the pistil, is yellow-green to brown-green, somewhat inflated, 2.6 to 4 mm long, and elliptical in shape, with a 0.5 mm long beak and three stigma (Wilson et al. 2008, Ball and Reznicek 2003). The pistillate scales are equal to or slightly longer than the perigynia and are brown with a pale midrib (Wilson et al. 2008). Hanging sedge develops achenes, which are three sided, brown, and smooth (Wilson et al. 2008, Ball and Reznicek 2003).



Images: left, female drooping spike, approximately 6 inches long; center, image of the pistillate scales, brown with light brown center stripe, and perigynia from the female spike; right, hanging sedge inflorescence, all images Wendy DesCamp, WSNWCB.

Similar species:

When flowering stems are not present, hanging sedge may look similar to small-fruited bulrush (*Scirpus microcarpus*), big-leaf sedge (*Carex amplifolia*), slough sedge (*Carex obnupta*) and possibly other native sedges. Check with your local county noxious weed board, or other local experts to confirm identification.

Look-a-like species information:

- Big-leaf sedge (*Carex amplifolia*) differs from hanging sedge as it spreads by rhizomes and has paler leaves, upright stems and the spikes are upright in the inflorescence (Wilson et al. 2008). Big-leaf sedge is a native species to Washington, and additional information can be found online at the UW Burke Herbarium website: <https://biology.burke.washington.edu/herbarium/imagecollection/taxon.php?Taxon=Carex%20amplifolia>
- Small-fruited bulrush (*Scirpus microcarpus*) differs from hanging sedge as it spreads by rhizomes, has a branched inflorescence, and doesn't have long, drooping spikes. Small-fruited bulrush is a native species to Washington, and information can be found online at the UW Burke Herbarium website: <https://biology.burke.washington.edu/herbarium/imagecollection/taxon.php?Taxon=Scirpus%20microcarpus>
- Slough sedge (*Carex obnupta*) differs from hanging sedge as it spreads by rhizomes, leaves are narrower 0.12 to 0.28 inches (3 to 8 mm wide), while hanging sedge is 0.3 to 0.8+ inches wide (8 to 20+mm wide). Leaves turn more yellowish as they age (Wilson et al. 2008). The lateral female spikes are erect/lateral to drooping, dark brown to reddish brown, and only up to 5.9 inches (15 cm) long

(Wilson et al. 2008). Slough sedge is a native species to Washington, and information can be found online at the UW Burke Herbarium website:

<https://biology.burke.washington.edu/herbarium/imagecollection/taxon.php?Taxon=Carex%20obnupta>

Additional comparison information can also be found on the Clackamas Soil and Water Conservation District WeedWise webpage for hanging sedge: <https://weedwise.conservationdistrict.org/cape45>.



Images: hanging sedge on left, slough sedge in foreground and on right, image by Tom Erler, King County Noxious Weed Control Program (Shaw 2020); right, small-fruited bulrush branched inflorescence, image Wendy DesCamp WSNWCB.

Habitat:

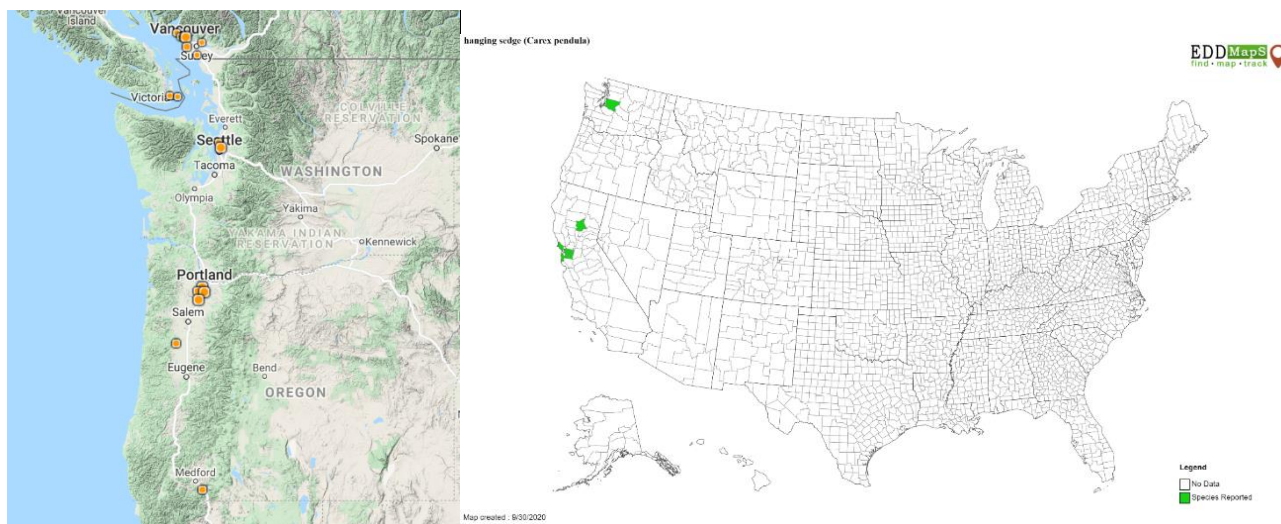
Hanging sedge typically grows in moist to wet soils and in partly shaded to shaded environments. If planted in drier environments, supplemental watering may be needed. In the British Isles, part of its native range, hanging sedge grows in rich, heavy soils in woods and damp copses (Stace 2010). In the Pacific Northwest, hanging sedge escapes ornamental plantings and naturalizes in riparian forests, ravines, wetlands, lake shores, parks, trails, roadsides, and restoration plantings (CPNWH 2020, Shaw 2020). Hanging sedge is noted to grow in most any wet soil but does best in high clay soils (Wilson et al. 2008).

Geographic Distribution:

According to the USDA GRIN database (USDA ARS 2020), hanging sedge is native to Europe, western Asia, and northern Africa.

- In Europe, hanging sedge is native to Denmark, United Kingdom, Ireland, Sweden, Austria, Belgium, Switzerland, Czech Republic, Germany, Hungary, Netherlands, Poland, Slovakia, Belarus, Moldova, Ukraine, Albania, Bulgaria, Bosnia and Herzegovina, Greece, Croatia, Italy, Romania, Serbia, Slovenia, Spain, France, and Portugal.
- In Asia, hanging sedge is native to Iran, Iraq, Lebanon, Syria, Turkey, Armenia, Azerbaijan, and Georgia.
- In northern Africa, hanging sedge is native to Portugal (Azores, Madeira Islands), Algeria, Morocco, and Tunisia.

Hanging sedge is documented as a naturalized species in California, Oregon, Washington, Virginia, and Illinois in the United States (EDDMapS 2020, CPNWH 2020, Ball and Reznicek 2003). Other places where hanging sedge has naturalized include British Columbia Canada, New Zealand, and Australia (Australasian Virtual Herbarium 2020, CPNWH 2020).



Images: left, map of herbarium records of hanging sedge in Washington, Oregon, and southern British Columbia (Consortium of Pacific Northwest Herbaria 2020); right, EDDMapS (2020) county presence distribution data of hanging sedge.

History:

Hanging sedge was introduced as an ornamental species. The first herbarium specimen of naturalized hanging sedge in the Pacific Northwest is from 1999 in the Washington Park Arboretum, Seattle WA, where it was documented growing along a small stream (WTU 240127). In 2000, hanging sedge was then documented in West Vancouver, British Columbia, growing in a seepage area (UBC V226430). Since 2000, collections of hanging sedge have been made in the Pacific Northwest for most years up to the present, with the highest number of collection (8) made in 2012 (CPNWH 2020). The following distribution of collections from southern British Columbia to southern Oregon, west of the Cascade Mountains are:

- 14 collections from British Columbia, Canada
- 13 collection from Washington State
- 26 collections from Oregon State

Listings:

Hanging sedge is not listed as a noxious weed or a regulated plant anywhere in the United States (National Plant Board 2020). It is included on the following invasive species lists:

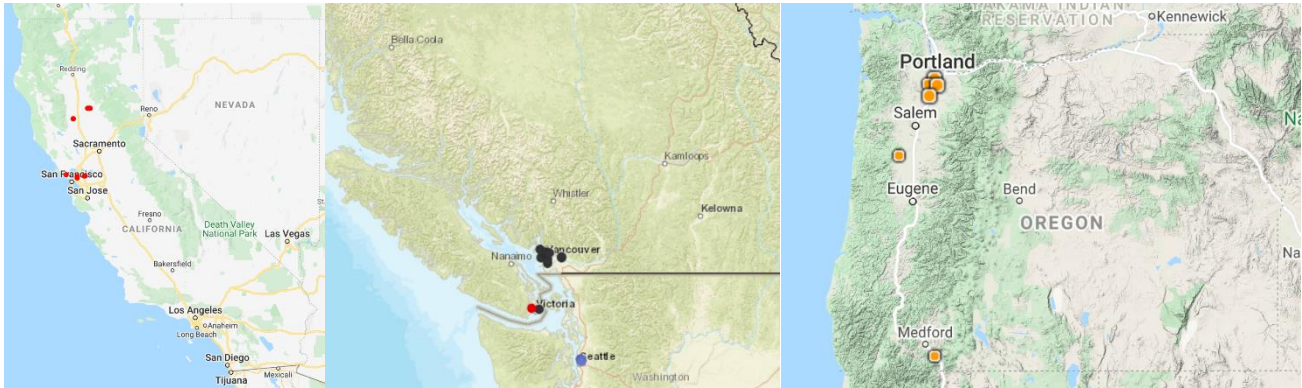
- Listed as a Weed of Concern in King County, Washington by the King County Noxious Weed Control Board in 2020
- Designated as an “A” species in the City of Portland’s Portland Plant List
- Oregon’s Watch List
- Oregon’s Clackamas SWCD WeedWise Priority species
- City of Eugene – Invasive Species Prohibited List
- Native Plant Society of Oregon’s invasive ornamentals list for the Southern Willamette Valley (NPSO 2008).
- Early detection list for the Bay Area Early Detection Network (California)
- California Invasive Plant Council Watch List

In New Zealand, hanging sedge is listed on their National Plant Pest Accord List, which makes it illegal to propagate, distribute, or sell listed species (USDA 2013).

Nearby to Washington:

California:

Hanging sedge is documented having escaped ornamental plantings in the San Francisco Bay area and Sacramento Valley in California (Cal-IPC, n.d.). A 1975 record from Mill Valley in Marin County is the first documentation of escaped hanging sedge in the United States (National Park Service 2016). In 2014, several thousand plants in Marin County had spread over a two-mile area, originating from an ornamental planting, and were removed along Old Mill Creek (Bikle 2014). Along Redwood Creek in Humboldt County, 57 patches of hanging sedge were found in 2016 during a survey, up from 12 patches found in 2010 (National Park Service 2016). All plants documented during the 2016 survey were removed.



Maps: left, map of hanging sedge herbarium records (red dots) in California (Berkeleymapper 2020); center, E-Flora of British Columbia distribution map (2020) of records (black and red) in British Columbia, occurring around Victoria and the Vancouver area (F. Lomer in Klinkenberg 2020); right, map of herbarium records (orange dots) in Oregon State (CPNWH 2020).

British Columbia, Canada:

The E-Flora of British Columbia notes that hanging sedge readily escapes gardens and has been collected in Horseshoe Bay and in a ditch by a garden shop in Port Coquitlam (F. Lomer in Klinkenberg 2020). Records document collections around Victoria on Vancouver Island and also in Richmond, Vancouver, North Vancouver and West Vancouver areas. Habitats where specimens were collected include: shaded woods, mucky ditch by wet lawn, sea beach, disturbed track margin next to cranberry field, shaded streambank, edges of flowing water in ravine, railroad ditch, and pond edges (CPNWH 2020).

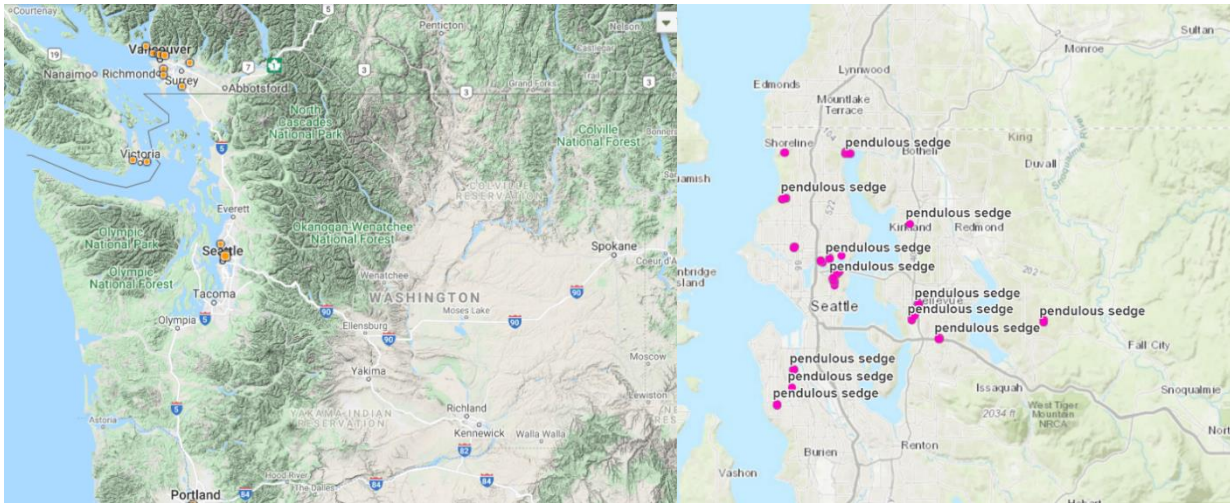
Oregon:

Herbarium records document hanging sedge in western Oregon, with specimens from five counties:

- Benton County: 3 specimens
- Clackamas County: 9 specimens
- Jackson County: 2 specimens
- Multnomah County: 9 specimens
- Washington County: 3 specimens

Clackamas Soil and Water Conservation District (SWCD) has found hanging sedge to grow and impact wetlands, streambanks, roadsides, and adjacent forested areas. Hanging sedge has been observed displacing native plants along streams and growing densely in some areas (Clackamas SWCD, n.d.). As previously noted, hanging sedge is included on a number of invasive species lists in the state, including Oregon's Watch List and Clackamas SWCD WeedWise Priority species list.

Washington:



Maps: left, herbarium records (orange dots) of hanging sedge in Washington State (CPNWH 2020); right, map of hanging sedge/pendulous sedge records (dark pink dots) from the King County Noxious Weed Program (Erler 2019).

Distribution information of hanging sedge in Washington is known from herbarium specimens, online databases, and by observations.

All 13 of the hanging sedge herbarium records in Washington State are from King County (CPNWH 2020). All of these records are located within Seattle city limits except for one that was collected in Shoreline, Washington. There are also two EDDMapS records (8012919, 8085138) from the same location of a large hanging sedge plant, with a diameter of approximately 10 feet, from Enumclaw, King County (EDDMapS 2020). Additional counties having observations of hanging sedge are documented in iNaturalist; one record in Kitsap County of hanging sedge growing along a roadside <https://www.inaturalist.org/observations/15146094>, two records in Snohomish County https://www.inaturalist.org/observations?place_id=410&taxon_id=49365, and four records in Thurston County https://www.inaturalist.org/observations?place_id=1666&taxon_id=49365 (iNaturalist 2020).

An informal survey of county noxious weed board coordinators, where 32 counties responded, had the following responses to having hanging sedge:

- 4 counties have escaped hanging sedge (King, Whatcom, Mason, Skamania)
- 21 counties do not have escaped hanging sedge
- 8 counties were not sure if they have escaped hanging sedge

Informal survey comments about known escaped hanging sedge plants included:

- Skamania County: not sure if it was escaped or just planted.
- Whatcom County: "We have documented 6 sites here, probably 100-200 square feet, all in the vicinity of Whatcom Creek in Bellingham. I would guess there are more plants downstream from the sites we documented and perhaps more in other stream sites in our urban parks."
- Mason County: "This plant was widely available from the Mason Master Gardener demo garden in the '90's and early 2000's. I suspect it could have a fairly large distribution in the county, but there is little-no documentation of populations."

The King County Noxious Weed Control Program (Shaw 2020) reported the following information about hanging sedge population in the county (excerpted from the report by Sasha Shaw, with information from Tom Erler):

Habitats in King County where hanging sedge occurs: “riparian systems, wetlands, lakes, trails, parks, roads, drainage outfalls, aging/unmaintained gardens/landscape installations, and restoration plantings (seeds moving in with plant material/soil).”

“There are a number of infestations around the UW Seattle campus, where it was originally planted in a few landscaped areas. It is weedy in beds, medians, and cracks in sidewalks within the central campus. Originally planted in 1988 near Fluke Hall, it has since established a dense seedbank and has spread to the opposite side of the building where it is in the median on both sides of Mason Road and under big leaf maple trees. It is also dense near previous plantings around the Fisheries building on campus and is also growing along Portage Bay’s north shoreline behind UW Hospital.”

“UW Arboretum reports plants spreading along Arboretum Creek, and Tom Erler has seen it growing around the wetlands in the vicinity of the Arboretum. Plants have reached from Lake Washington South to its apparent source at the Japanese Garden pond and stormwater overflow.”

Additional locations of hanging sedge have been documented in King County in iNaturalist as well as by the King County Noxious Weed Control Program (Erler 2019).

Growth and Development:

Hanging sedge is an evergreen sedge that can grow into a clump that is 3.3 feet (1 meter) or more in diameter (RHS 2011 in USDA 2013). Plants flower and form seeds in the spring and summer, with time estimates varying by location.

Reproduction:

Hanging sedge reproduces by seeds and rhizomes (Brusati 2016). Each plant is estimated to produce 20,000 or more seeds in favorable conditions and can have a 90% germination rate (Brändel and Schütz 2005). Seeds have dormancy that is broken by light and cold temperatures, and seeds appear to be viable in the seedbank for at least two years (Brändel 2005 in USDA 2013). Tom Erler (2019) observed viability of seeds for up to five years. Dispersed primarily by water, seeds can rapidly spread downstream and establish new plants. Seeds may also be distributed by people and possibly by wind, though this needs further investigation (USDA 2013, Seifert 2008 in USDA 2013). Hanging sedge is also introduced to new areas via ornamental plantings. While plants can resprout from roots, it is unknown if dispersed rhizome fragments can establish and resprout (A. Forrestel in Brusati 2016).

Economic and Ecological Importance:

Detrimental:

Invading shaded riparian areas, hanging sedge can form dense areas of growth that can crowd out native plant communities (Brusati 2016, Clackamas SWCD n.d., Wilson et al. 2008). The change in the makeup of the plant community could cause potential impacts to the ecosystem, but research is needed to determine the possible effects (A. Forrestel in Brusati 2016).

The King County Noxious Weed Control Program’s report (Shaw 2020) on hanging sedge in King County states:

“According to Tom Erler of the King County Noxious Weed Control Program, one local example that shows the invasive potential of *Carex pendula* is on Lyon Creek in Lake Forest Park, where Lyon Creek passes under State Route 522, and flows into Lake Washington at Lyon Creek Waterfront Park. A recent culvert replacement project completed in 2015 is now inundated with *Carex pendula* at varying levels of maturity, and there are dozens of mature plants with evidence of 2019 seeding all the way along the newly engineered areas with a dense infestation in the floodplain near the mouth of the creek. There were a few mature plants immediately upstream at adjacent private properties that

appear both cultivated and adventive, however more surveying further upstream might reveal a larger seedbank.”



Images: left, hanging sedge spreading along the Lyons Creek Flood Mitigation Project, image by Tom Erler, 2019; right, hanging sedge growing along a shaded, wet trail in Bothell, WA, image by Tom Erler, 2019.

Hanging sedge has proven to be difficult to remove from ornamental landscapes (Wilson et al. 2008). The King County Noxious Weed Control Program’s report on hanging sedge (Shaw 2020):

“Alexander Wright, former staff botanist of Bellevue Botanical Garden, reported that one garden in Kitsap County had a particular problem with it. He wrote, “I helped remove dozens and dozens of mature plants, and there were seedlings growing solid as a lawn. Seedlings would appear sparsely in the shade, but as soon as the overstory was removed or thinned, the seedlings started appearing more densely, apparently from dormant seed.”

The USDA (2013) Plant Protection and Quarantine Weed Risk Assessment (PPQ WRA) model result for hanging sedge was ‘evaluate further’, though it almost reached the ‘high risk’ threshold. The PPQ WRA model did estimate about 70% of the United States could be invaded by hanging sedge but also noted that riparian areas are the most likely habitats to be invaded.

Beneficial:

Hanging sedge has been planted in landscapes as an ornamental species due to its size and being evergreen (Shaw 2020, Brickell and Cathey 2008). Gardening resources do refer to hanging sedge as a desirable landscape plant and some do note its propensity to spread (seedaholic.com n.d., plantthis.com n.d.).

Research in Europe on using hanging sedge for phytoremediation has shown some success in lab experiments and modeling, with rhizofiltration of hanging sedge’s roots uptaking lead from contaminated wastewater (Yadav et al. 2011).

Control:

Make sure to correctly identify hanging sedge prior to its management, as other native sedges can look similar when not in bloom. Check with your local county noxious weed board before controlling plants along the edges of streams and other waterways, as local restrictions may prohibit certain control methods. County noxious weed control board contact information can be found on the Washington State Noxious Weed Control website here: <https://www.nwcb.wa.gov/contact-your-county-weed-boards>.

Manual, Mechanical:

Hanging sedge plants can be dug up with a shovel or other digging tool, making sure to remove the roots to prevent resprouts. Minimize ground disturbance as much as possible, and plant and/or seed desirable non-

invasive species to provide competition to hanging sedge seedlings and other weeds. Monitor the site and control and resprouts or seedlings that occur.

If management of hanging sedge is delayed or too many plants are present to control the entire infestation initially, at the minimum make sure to remove seed heads to prevent seed spread (Head 2019).

Plants can be dug up and the area covered in sheet mulch to prevent resprouts and seed germination, though follow-up maintenance will be needed (Erler 2019).

Biological Control:

There are no approved biological control agents for hanging sedge in Washington State.

Chemical Control:

City of Portland has had good results using 2% glyphosate with Agridex to control hanging sedge plants (Erler 2019, Maze, n.d.).

Currently, hanging sedge is not included in The Pacific Northwest Weed Management Handbook, but check back as this resource is continually updated: <https://pnwhandbooks.org/>. For questions about specific herbicide use and where aquatic formulated herbicides may be needed, please contact your county noxious weed control board.

In general, use herbicide control in combination with other control methods to reduce usage when possible. When using herbicide, treat plants when pollinators are not present or are the least active. Monitor plants to make sure all have been controlled, and follow up with additional control methods as needed.

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