Stipa cernua Steb. & Love, NODDING NEEDLE GRASS. Perennial herb, rhizomatous (highly condensed), fibrous-rooted, many-stemmed at base, densely cespitose with shoots crowded along rhizome, unbranched above, erect to ascending, 30–110 cm tall; shoots with basal leaves and several cauline leaves becoming tightly inrolled concealing upper surfaces when water-stressed, with the uppermost cauline leaf sheath (flag leaf) initially concealing peduncle; when water-stressed exposed surfaces glabrous or with minute hairs but upper (hidden) leaf surface typically villous or puberulent. **Stems (culms):** many-ridged, to 2.5 mm diameter, bent at lower nodes and straight above, internodes 40–185 mm long, lower internodes pubescent to puberulent, upper stem generally glabrous but puberulent below glabrous node, sometimes with minute hairs in furrows. **Leaves:** alternate distichous, simple with sheath; prophyll (first leaf of shoot) and then several leaves = only sheath; prophyll 2-keeled, to 20 mm long, short-ciliate along keels; sheath open, ridged, to 190 mm long, glabrous, narrowly membranous on margins, ciliate on margin approaching blade, often 1 margin with ascending lobe continuous with ligule, without lobes (auricles) at top; ligule membranous, truncate and jagged on margin to rounded, jagged, 0.1–1.6 mm long, glabrous; collar glabrous or with several marginal hairs; blade linear, 30–330 × 0.4–2.8 mm, flat (flowering shoot) but later becoming inrolled concealing upper surface, ± ciliate on margins above midblade, parallel-veined and strongly ridged on upper surface and with only midrib prominent on lower surface, upper surface dull to semi-glossy, hairy to midblade, lower surface glabrous or minutely scabrous. **Inflorescence:** spikelets, in terminal panicles, panicle open, lax, arching to drooping, in range 260–430+ mm long, with ± ascending, flexible branches from 5–7 nodes widely spaced at base and progressively closer above, lateral branches typically 2 per node and unequal in pair, spikelet with 1 floret, bracteate, with awn; peduncle 90–180 mm long; node with a tuft of ascending hairs; lateral branches flexible, 90–230 mm long with first internode (3–)9–70 mm long, bearing 13–16 spikelets; stalk of spikelet 1.4–12 mm long, ascendingly pubescent to finely strigose. **Spikelet:** narrowly lanceoloid-fusiform, breaking above glumes, floret sometimes cleistogamous; **glumes** 2, erect, unequal narrowly lanceolate and long-tapered to tip, lower glume in range 15–18 mm long and 3-veined at base with midvein ± keeled and lateral veins extending < 1/4 from base of glume, upper glume in range 11.8–14 mm long and ridged 3-veined from base and lateral veins extending to 1/3 from base, green at base and along veins, membranous and tinged purplish red from between veins to tip and on margins, persistent and spreading in fruit; callus in range 1.2–1.8 mm long, densely short-strigose with ascending hairs; **lemma** awned, body narrowly lanceoloid slightly constricted below tip forming a crown, in range 5.2–6.7 × 0.5–0.7 mm, with strongly overlapping margins, faintly veined (often only midvein evident), silky with appressed to ascending hairs at base and along midvein to midpoint (along lateral veins), papillate-scabrous between veins below neck; crown 0.5–1.5 mm long and 0.2–0.3 mm wide at tip, not papillate, with an ascending ring of hairs from top 0.8–1.2 mm long; awn arising from top of crown, in range 75–91 mm long, 0.2–0.3 mm diameter at base, typically ± wavy with 2 bends, the basal portion 14–18 mm long, twisted and short-hairy with hairs 0.5 mm long, the middle portion 6–12 mm long, slightly twisted and short-hairy, the terminal portion 48–61 mm long, straight or arched downward, very short-hairy or scabrous; **palea** membranous, narrowly oblong, ca. 2 mm long, veins absent, glabrous. **Flower:** bisexual; **perianth (lodicules)** 2, lanceoloid, 0.4–0.8 mm long, fleshy at anthesis aging flat, translucent; **stamens** 3, free; filaments threadlike (short in cleistogamous floret);

anthers linear, 3.5–5.5 mm long or 0.4–0.5 mm long (cleistogamous floret), light yellow, with several short hairs at tip (pedicellate), longitudinally dehiscent; pollen light yellow; **pistil** 1; ovary superior, ellipsoid, ± 0.7 mm long, glossy translucent green, glabrous, 1-chambered with 1 ovule; styles 2, spreading and exserted laterally from about midpoint of lemma (chasmogamous floret), white, naked on basal 0.2 mm and feathery with stigmatic hairs most of length, naked on basal 0.2 mm. **Fruit:** achene (caryopsis), tightly enclosed by lemma and with a densely hairy, whitish callus; achene narrowly ellipsoid, 4.5–5 × 0.4–0.5 mm, green when fruit abscised drying light reddish brown; enveloping lemma ca. 7 × 1 mm + cylindric crown 0.2–0.5 × 0.3–0.35 mm and erect bristles on crown rim 0.8–0.9 mm long, green when fruit abscised aging brown, 3 principal veins with conspicuous ascending straight hairs to or above midpoint on midvein (lateral veins), faces between veins minutely papillate and blisterlike mostly above midpoint; awns ± 0.25 mm diameter at base, scabrous, with 1 distinct 90º bend and a weakly defined second bend or second bend obscure, lower and middle segments strongly twisted, the upper segment the longest and somewhat wavy. Early March–mid May.

Native. Perennial herb, a bunchgrass scattered in coastal sage scrub and chaparral mostly in the western half of the range. *Stipa cernua* is identified critically by the characteristics of the lemma and awn. The lemma, in flower and in fruit, has ascending long hairs along the midvein and the lateral veins may lack hairs entirely; the collar typically is less than half a millimeter in length. The long awn of the lemma resembles that of *S. pulchra* but is much finer, so that measuring the base diameter of the awn (0.25 millimeter) permits one to identify this species before fruits are mature. Experts prefer the observer to evaluate the bends in the awn and the wavy (cernuous) nature of the last segment, which are rarely definitive, especially if fruits are still immature.
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