

Australia/New Zealand Weed Risk Assessment adapted for United States.

Data used for analysis published in: Gordon, D.R. and C.A. Gantz. 2008. Potential impacts on the horticultural industry of screening new plants for invasiveness. Conservation Letters 1: 227-235. Available at: <http://www3.interscience.wiley.com/cgi-bin/fulltext/121448369/PDFSTART>

| <i>Hedera pastuchovii</i> | | | |
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| Question number | Question | Answer | Score |
| 1.01 | Is the species highly domesticated? | n | 0 |
| 1.02 | Has the species become naturalised where grown? | | |
| 1.03 | Does the species have weedy races? | | |
| 2.01 | Species suited to U.S. climates (USDA hardiness zones; 0-low, 1-intermediate, 2-high) | 2 | |
| 2.02 | Quality of climate match data (0-low; 1-intermediate; 2-high) | 2 | |
| 2.03 | Broad climate suitability (environmental versatility) | n | 0 |
| 2.04 | Native or naturalized in regions with an average of 11-60 inches of annual precipitation | y | 1 |
| 2.05 | Does the species have a history of repeated introductions outside its natural range? | y | |
| 3.01 | Naturalized beyond native range | n | -2 |
| 3.02 | Garden/amenity/disturbance weed | n | 0 |
| 3.03 | Weed of agriculture | n | 0 |
| 3.04 | Environmental weed | n | 0 |
| 3.05 | Congeneric weed | y | 2 |
| 4.01 | Produces spines, thorns or burrs | n | 0 |
| 4.02 | Allelopathic | | |
| 4.03 | Parasitic | n | 0 |
| 4.04 | Unpalatable to grazing animals | | |
| 4.05 | Toxic to animals | n | 0 |
| 4.06 | Host for recognised pests and pathogens | | |
| 4.07 | Causes allergies or is otherwise toxic to humans | y | 1 |
| 4.08 | Creates a fire hazard in natural ecosystems | | |
| 4.09 | Is a shade tolerant plant at some stage of its life cycle | ? | |
| 4.1 | Grows on one or more of the following soil types: alfisols, entisols, or mollisols | y | 1 |
| 4.11 | Climbing or smothering growth habit | y | 1 |
| 4.12 | Forms dense thickets | | |

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| 5.01 | Aquatic | n | 0 |
| 5.02 | Grass | n | 0 |
| 5.03 | Nitrogen fixing woody plant | n | 0 |
| 5.04 | Geophyte | n | 0 |
| 6.01 | Evidence of substantial reproductive failure in native habitat | n | 0 |
| 6.02 | Produces viable seed | ? | |
| 6.03 | Hybridizes naturally | ? | |
| 6.04 | Self-compatible or apomictic | | |
| 6.05 | Requires specialist pollinators | | |
| 6.06 | Reproduction by vegetative fragmentation | | |
| 6.07 | Minimum generative time (years) | | |
| 7.01 | Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas) | | |
| 7.02 | Propagules dispersed intentionally by people | y | 1 |
| 7.03 | Propagules likely to disperse as a produce contaminant | n | -1 |
| 7.04 | Propagules adapted to wind dispersal | n | -1 |
| 7.05 | Propagules water dispersed | | |
| 7.06 | Propagules bird dispersed | y | 1 |
| 7.07 | Propagules dispersed by other animals (externally) | n | -1 |
| 7.08 | Propagules dispersed by other animals (internally) | | |
| 8.01 | Prolific seed production | | |
| 8.02 | Evidence that a persistent propagule bank is formed (>1 yr) | | |
| 8.03 | Well controlled by herbicides | | |
| 8.04 | Tolerates, or benefits from, mutilation or cultivation | | |
| 8.05 | Effective natural enemies present in U.S. | | |
| Total Score | | | 3 |

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| Outcome | Evaluate |
|----------------|-----------------|

| section | # questions answered | satisfy minimum? |
|---------|----------------------|------------------|
| A | 11 | Yes |
| B | 6 | Yes |
| C | 10 | Yes |
| total | 27 | yes |

Data collected 2008

| Question number | Reference | Source data |
|-----------------|--|--|
| 1.01 | | used horticulturally, but no evidence of significant modification |
| 1.02 | | |
| 1.03 | | |
| 2.01 | <p>1. PERAL NAPPFAST Global Plant Hardiness (http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20Igcd.tif). 2. Eristavi, M, Shulkina, T, Sikhuralidze, S, and Asieshvili, L. Rare, Endangered and Vulnerable Plants of the Republic of Georgia. http://www.mobot.org/MOBOT/Research/georgia/checklist.pdf. Accessed March, 2008.</p> <p>3. ZipcodeZoo.com (http://zipcodezoo.com/Plants/H/Hedera_pastuchovii.asp). 4. Ackerfield, J and Wen, J (2002) A morphometric analysis of Hedera L. (the ivy genus, Araliaceae) and its taxonomic implications. <i>Adansonia</i>, sér. 3, 24(2): 197-212. 5. Czerepanov, SK (1995) <i>Vascular Plants of Russia and Adjacent States (the former USSR)</i>. Cambridge University Press, Cambridge and New York.</p> <p>6. Walters, SM et al (1984) <i>The European Garden Flora</i>. Volume V. Pp. 375-376, 378-379. Cambridge University Press, Cambridge (Cambridgeshire) and New York.</p> <p>7. Shishkin, BK (1950) <i>Flora of the U.S.S.R.</i> Volume XVI. Umbelliflorae. Pp. 5, 7-8. Izdatel'stvo Akademii Nauk SSSR, Moskva-Leningrad and Israel Program for Scientific Translations, Jerusalem (1973).</p> <p>8. Huxley, A (1992) <i>The New Royal Horticultural Society Dictionary of Gardening</i>. The MacMillan Press, London.</p> | <p>1. Global plant hardiness zones 4-8. 2. Northern Caucasus (Dagestania); Transcaucasus: Georgia, Azerbaijan. 3. E. Transcaucasus, NW & N Iran 4. "distributed in...Iran and the Caucasus"; "Caucasus, Elburz Mts. in Iran" 5. Caucasus. 6. "Caucasus, Elburz Mountains, Iran". 7. "Caucasus: E. Transc. (Tionetskii Range, Zakataly, Nukha, Kuba), Tal. (Lenkoran district). Gen. distr.: Iran (Astrabad and Mazanderan). Described from Kusary near Kuba, E. Transcaucasia". 8. "USSR, Iran".</p> |
| 2.02 | | |
| 2.03 | <p>1. Köppen-Geiger climate map (http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-</p> | <p>1. Only two climatic regions. 2. Northern Caucasus (Dagestania); Transcaucasus: Georgia, Azerbaijan. 3. E. Transcaucasus,</p> |

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| | <p>2007.pdf). 2. Eristavi, M, Shulkina, T, Sikhuralidze, S, and Asieshvili, L. Rare, Endangered and Vulnerable Plants of the Republic of Georgia. http://www.mobot.org/MOBOT/Research/georgia/checklist.pdf. Accessed March, 2008.</p> <p>3. ZipcodeZoo.com (http://zipcodezoo.com/Plants/H/Hedera_pastuchovii.asp). 4. Ackerfield, J and Wen, J (2002) A morphometric analysis of Hedera L. (the ivy genus, Araliaceae) and its taxonomic implications. <i>Adansonia</i>, sér. 3, 24(2): 197-212. 5. Czerepanov, SK (1995) <i>Vascular Plants of Russia and Adjacent States (the former USSR)</i>. Cambridge University Press, Cambridge and New York.</p> <p>6. Walters, SM et al (1984) <i>The European Garden Flora</i>. Volume V. Pp. 375-376, 378-379. Cambridge University Press, Cambridge (Cambridgeshire) and New York.</p> <p>7. Shishkin, BK (1950) <i>Flora of the U.S.S.R.</i> Volume XVI. Umbelliflorae. Pp. 5, 7-8. Izdatel'stvo Akademii Nauk SSSR, Moskva-Leningrad and Israel Program for Scientific Translations, Jerusalem (1973).</p> <p>8. Huxley, A (1992) <i>The New Royal Horticultural Society Dictionary of Gardening</i>. The MacMillan Press, London.</p> | <p>NW & N Iran 4. "distributed in...Iran and the Caucasus"; "Caucasus, Elburz Mts. in Iran"</p> <p>5. Caucasus. 6. "Caucasus, Elburz Mountains, Iran". 7. "Caucasus: E. Transc. (Tionetskii Range, Zakataly, Nukha, Kuba), Tal. (Lenkoran district). Gen. distr.: Iran (Astrabad and Mazanderan). Described from Kusary near Kuba, E. Transcaucasia". 8. "USSR, Iran".</p> |
| 2.04 | <p>1. Atlapedia Online (http://www.atlapedia.com/online/countries/azerbaj.htm). 2. Atlapedia Online (http://www.atlapedia.com/online/countries/georgia.htm). 3. Microsoft Encarta World Precipitation and Average Rainfall (http://uk.encyclopedia.msn.com/encnet/RefPages/RefMedia.aspx?refid=461530746&artrefid=761554737&pn=3&sec=-1).</p> | <p>1. For Azerbaijan: average annual precipitation is between 200 to 300 mm (8 to 12 inches) in the lowlands and 300 to 900 mm (12 to 35.5 inches) in the highlands, although precipitation is distributed unevenly throughout the year. 2. For Georgia: along the coast average annual precipitation varies from 1,200 to 2,800 mm (47 to 110 inches) to 600 to 800 mm (24 to 31.5 inches) in the mountainous regions. 3. For Iran, average annual precipitation ranges from less than 10 inches/year to 20 inches/year.</p> |
| 2.05 | <p>1. Ackerfield, J and Wen, J (2002) A morphometric analysis of Hedera L. (the ivy genus, Araliaceae) and its taxonomic implications. <i>Adansonia</i>, sér. 3, 24(2): 197-212. 2. Shoot (http://www.shootgardening.co.uk/). 3. Huxley, A (1992) <i>The New Royal</i></p> | <p>1. "Members of the genus are highly valued as ornamentals, and are commonly used in the landscape as well as indoors." 2. British website has information about cultivation and suggested uses for this species. 3. Species is listed in reference, which is a dictionary of</p> |

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| | Horticultural Society Dictionary of Gardening. The MacMillan Press, London. | gardening for the UK. |
| 3.01 | | no evidence |
| 3.02 | | no evidence |
| 3.03 | | no evidence |
| 3.04 | | no evidence |
| 3.05 | 1. Roy, B et al (2004) An illustrated guide to the common weeds of New Zealand. 2nd Edition. New Zealand Plant Protection Society, Canterbury, New Zealand. 2. Holm, L, JV Pancho, JP Herberger, and DL Plucknett (1979) A Geographical Atlas of World Weeds. John Wiley and Sons, New York. 3. Henderson, L (2001) Alien weeds and invasive plants: a complete guide to declared weeds and invaders in South Africa, including another 36 species invasive in that region. Plant Protection Research Institute, Pretoria. 4. Weber, E (2003) Invasive Plant Species of the World. CAB International, Oxon, United Kingdom. | 1. Hedera helix is a weed in New Zealand. 2. Hedera helix is present as a weed in the USA. 3. Hedera helix is listed as a "Proposed weed and invader plant" in South Africa. 4. One congener is invasive in Australia, New Zealand, and the Western United States. |
| 4.01 | ZipcodeZoo.com (http://zipcodezoo.com/Plants/H/Hedera_pastuchovii.asp). | "Creeping or climbing by aerial roots, unarmed" [genus description]. |
| 4.02 | | |
| 4.03 | Walters, SM et al (1984) The European Garden Flora. Volume V. Pp. 375-376, 378-379. Cambridge University Press, Cambridge (Cambridgeshire) and New York. | no description of parasitism |
| 4.04 | | |
| 4.05 | Walters, SM et al (1984) The European Garden Flora. Volume V. Pp. 375-376, 378-379. Cambridge University Press, Cambridge (Cambridgeshire) and New York. | no evidence |
| 4.06 | | |
| 4.07 | Dave's Garden (http://davesgarden.com/guides/pf/go/120465/). | "All parts of plant are poisonous if ingested. Handling plant may cause skin irritation or allergic reaction." |
| 4.08 | | |

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| 4.09 | <p>1. Eristavi, M, Shulkina, T, Sikhuralidze, S, and Asieshvili, L. Rare, Endangered and Vulnerable Plants of the Republic of Georgia. http://www.mobot.org/MOBOT/Research/georgia/checklist.pdf. Accessed March, 2008.</p> <p>2. ZipcodeZoo.com (http://zipcodezoo.com/Plants/H/Hedera_pastuchovii.asp). 3. Shoot (http://www.shootgardening.co.uk/). 4. Walters, SM et al (1984) The European Garden Flora. Volume V. Pp. 375-376, 378-379. Cambridge University Press, Cambridge (Cambridgeshire) and New York.</p> | <p>1. "Forests, forest margins". 2. "Sun Exposure: Sun to Partial Shade". 3. "Light: Partial Shade, Full Sun". 4. "Most species bear full sun, enjoy light shade".</p> |
| 4.1 | <p>1. USDA, National Resources Conservation Services (NRCS), Soil Survey Division, World Soil Resources (http://soils.usda.gov/use/worldsoils/mapindex/order.html). 2. Shoot (http://www.shootgardening.co.uk/).</p> | <p>1. Entisols occur throughout almost all of Iran and northwest Iran. Alfisols, entisols, and mollisols occur in Azerbaijan and entisols and mollisols occur in Georgia. 2. "Soil types: Chalky, Clay, Loamy, Sandy (will tolerate most soil types)."</p> |
| 4.11 | <p>1. Shishkin, BK (1950) Flora of the U.S.S.R. Volume XVI. Umbelliflorae. Pp. 5, 7-8. Izdatel'stvo Akademii Nauk SSSR, Moskva-Leningrad and Israel Program for Scientific Translations, Jerusalem (1973). 2. Shoot (http://www.shootgardening.co.uk/). 3. Walters, SM et al (1984) The European Garden Flora. Volume V. Pp. 375-376, 378-379. Cambridge University Press, Cambridge (Cambridgeshire) and New York. 4. ZipcodeZoo.com (http://zipcodezoo.com/Plants/H/Hedera_pastuchovii.asp).</p> | <p>1. "Tall climbing shrub". 2. "Climbing, evergreen shrub". 3. "Evergreen, often climbing shrubs; aerial stems often attaching by adventitious roots" [genus description]. 4. "Creeping or climbing by aerial roots" [genus description].</p> |
| 4.12 | | |
| 5.01 | | Terrestrial |
| 5.02 | <p>Shishkin, BK (1950) Flora of the U.S.S.R. Volume XVI. Umbelliflorae. Pp. 5, 7-8. Izdatel'stvo Akademii Nauk SSSR, Moskva-Leningrad and Israel Program for Scientific Translations, Jerusalem (1973). 2. ZipcodeZoo.com (http://zipcodezoo.com/Plants/H/Hedera_pastuchovii.asp).</p> | Araliaceae |

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| 5.03 | Shishkin, BK (1950) Flora of the U.S.S.R. Volume XVI. Umbelliflorae. Pp. 5, 7-8. Izdatel'stvo Akademii Nauk SSSR, Moskva-Leningrad and Israel Program for Scientific Translations, Jerusalem (1973). 2. ZipcodeZoo.com (http://zipcodezoo.com/Plants/H/Hedera_pastuchovii.asp). | Araliaceae |
| 5.04 | 1. Shishkin, BK (1950) Flora of the U.S.S.R. Volume XVI. Umbelliflorae. Pp. 5, 7-8. Izdatel'stvo Akademii Nauk SSSR, Moskva-Leningrad and Israel Program for Scientific Translations, Jerusalem (1973). 2. ZipcodeZoo.com (http://zipcodezoo.com/Plants/H/Hedera_pastuchovii.asp). | 1. "Tall climbing shrub". 2. "Woody vines, evergreen" [genus description]. |
| 6.01 | | no evidence |
| 6.02 | Dave's Garden (http://davesgarden.com/guides/pf/go/120465/). | "Plant does not set seed, flowers are sterile, or plants will not come true from seed." |
| 6.03 | Hand, R (2004) Supplementary notes to the flora of Cyprus IV. Willdenowia 34(2): 427-456. | |
| 6.04 | | |
| 6.05 | | |
| 6.06 | | |
| 6.07 | | |
| 7.01 | | |
| 7.02 | 1. Ackerfield, J and Wen, J (2002) A morphometric analysis of Hedera L. (the ivy genus, Araliaceae) and its taxonomic implications. Adansonia, sér. 3, 24(2): 197-212. 2. Shoot (http://www.shootgardening.co.uk/). 3. Huxley, A (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London. | 1. "Members of the genus are highly valued as ornamentals, and are commonly used in the landscape as well as indoors." 2. British website has information about cultivation and suggested uses for this species. 3. Species is listed in reference, which is a dictionary of gardening for the UK. |
| 7.03 | | |
| 7.04 | 1. Ackerfield, J and Wen, J (2002) A morphometric analysis of Hedera L. (the ivy genus, Araliaceae) and its taxonomic implications. Adansonia, sér. 3, 24(2): 197-212. 2. ZipcodeZoo.com (http://zipcodezoo.com/Plants/H/Hedera_pastuchovii.asp). | 1. "Mature fruits black". 2. "Fruit a drupe, globose. Seeds ovoid; endosperm ruminant." [genus description]. [no evidence of adaptations to wind dispersal] |

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| | stuchovii.asp). | |
| 7.05 | | |
| 7.06 | 1. Walters, SM et al (1984) The European Garden Flora. Volume V. Pp. 375-376, 378-379. Cambridge University Press, Cambridge (Cambridgeshire) and New York. 2. Shishkin, BK (1950) Flora of the U.S.S.R. Volume XVI. Umbelliflorae. Pp. 5, 7-8. Izdatel'stvo Akademii Nauk SSSR, Moskva-Leningrad and Israel Program for Scientific Translations, Jerusalem (1973). | 1. "Fruit a drupe, black." 2. "Fruit black, 6-10 mm across." [species description]; "fruit berry-like with fleshy exocarp and coriaceous endocarp; seeds...with plicate endosperm" [genus description]. |
| 7.07 | 1. Ackerfield, J and Wen, J (2002) A morphometric analysis of Hedera L. (the ivy genus, Araliaceae) and its taxonomic implications. Adansonia, sér. 3, 24(2): 197-212. 2. ZipcodeZoo.com (http://zipcodezoo.com/Plants/H/Hedera_pa_stuchovii.asp). | 1. "Mature fruits black". 2. "Fruit a drupe, globose. Seeds ovoid; endosperm ruminant." [genus description]. [no evidence of adaptations to external dispersal] |
| 7.08 | | |
| 8.01 | | |
| 8.02 | | |
| 8.03 | | |
| 8.04 | | |
| 8.05 | | |