



**Garry Oak  
Ecosystems  
Recovery Team**

**Annotated Bibliography on the  
Ecology and Management of Invasive Species:**

**Giant House Spider and Hobo Spider  
(*Tegenaria duellica* and *Tegenaria agrestis*)**

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For the Garry Oak Ecosystem Recovery Team

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**Baird, C. R. and R. L. Stoltz.** 2002. Range expansion of the hobo spider, *Tegenaria agrestis*, in the northwestern United States (Araneae, Agelenidae). *Journal of Arachnology* 30:201-204.

Baird and Stoltz outlined the history of the introduction and subsequent spread of *T. agrestis* in western North America. By the end of 2001, they noted that *T. agrestis* was established in most counties of Washington, Oregon, and Idaho, was rare but locally abundant at localities across extreme southern British Columbia, and had turned up as isolated records in Wyoming, Nevada, and Utah. The authors discussed species diagnostic characters, other species encountered in the study (and commonly misidentified as hobo spiders by the public), and presented some seasonal activity data based on information from US specimens submitted by homeowners and county extension offices.

**Bennett, R. G.** *Personal communication.* British Columbia Ministry of Forests, Seed Pest Management Officer, Saanichton, BC.

Spiders are generally considered beneficial predators wherever they occur. Little attention has been paid to them as pest species except where they become household nuisances or are believed to be of medical importance. In Garry oak ecosystems *Tegenaria* spiders (*T. duellica* and *T. agrestis*) provide an interesting example of the successful invasion of a natural habitat by non-native spiders. Literature discussing *Tegenaria* spiders in North America is limited and largely concerned with taxonomic description and discussion of ranges. No peer-reviewed work has been published on their role as invasive species in natural habitats although research in this area has now (summer 2002) started at Simon Fraser University. Those works that address

management of *Tegenaria* spiders limit discussion to control of populations occurring in or around homes and buildings. *Tegenaria duellica* is now one of the most common spiders in the Georgia Lowlands and Puget Trough. Impacts: Currently the impacts on Garry oak ecosystems are unknown. *Tegenaria duellica* and, to a lesser extent, *T. agrestis* can be very abundant on the undersurface of coarse woody debris, rocks and other objects on the ground. The retreat portions of their webs may nearly completely cover this habitat. It is likely they are displacing native arthropod species that normally would occupy these habitats. Field description: Moderately large to large greyish-brown spiders with more or less conspicuous herring-bone patterning on the abdomen and building messy funnelwebs on the undersurface of objects in suitable habitat. Native species of *Agelenopsis* grass spiders appear similar and build similar appearing funnel webs and may be common in Garry oak ecosystems. However, their webs usually occur in open grassy areas and in vegetation and are not usually associated with the undersurface of objects. The entrance to *Agelenopsis* funnel webs is normally circular while the entrance to *T. agrestis* and *T. duellica* webs normally is oval (wider than high). There is no readily available field guide for identifying *Tegenaria* spiders. Roth (1968) provides descriptions and diagnostic drawings for the genus and all North American species (*T. duellica* mistakenly called *T. saeva* in his paper) but is out of print. *Tegenaria* spiders are distinguished from similar spider species (including *Agelenopsis*) by the combined presence in *Tegenaria* of eight eyes in two straight to moderately downcurved eye rows (when viewed from in front of spider and feathery hairs on the legs and body (visible at 40-50x magnification). *Agelenopsis* spiders have the two eye rows strongly downcurved and appearing to be in three rows (2, 4, & 2). *Tegenaria agrestis* adults are “moderately” large spiders with leg spans of 27-45 mm. *Tegenaria duellica* adults are “large” with leg spans of 35-95mm. *Tegenaria duellica* is one of the largest spiders in Canada . Also, specimens of *T. duellica* tend to be considerably bigger, darker and with more distinctive abdominal patterning than specimens of *T. agrestis*. In all cases, distinguishing *T. duellica* and *T. agrestis* is most reliably done using genitalia characters as size, colour and patterning characters exhibit great variability and require experience to be used for species identification. Habitat: Beaches, rocky shores and outcrops, Garry oak meadows or openings in wooded areas may support substantial populations. Within suitable habitat, these spiders build tangled web retreats attached to (and often completely covering) the undersurface of virtually any object on the ground. Webs emerge from under objects as large but often inconspicuous funnels, characteristically oval in shape (opening wider than high and often up to 30 or 40 mm wide). Life history: *Tegenaria agrestis* and *T. duellica* reproduce annually - new males and females mature and mate in late summer and early fall. Mature females remain in their funnelwebs, newly matured males wander widely in search of the webs of receptive females. Males may cohabit with females for extended periods. Males usually do not live past late fall. Females may survive through the winter. New egg cases are produced in the fall within the retreat portion of the female’s web. A mated female can produce multiple egg sacs. Number of eggs per sac is variable - the few egg cases that have been monitored for hatching have produced from 36 to 147 spiderlings. Eggs overwinter and hatch in the following spring or early summer. Immatures moult an undetermined number of times before reaching maturity. Complete development likely takes more than one year. *Tegenaria* spiders use the upper surface of the exposed funnel portion of their webs for prey capture, actively pursuing

and subduing insects and other prey that become entangled in the webbing. The hidden portion of the web serves as a retreat. Unlike cobweb weaving spiders and the orb-web weaving garden spiders, *Tegenaria* spiders are fast and agile runners when removed from their webs. Management: *Tegenaria agrestis* and *T. duellica* are highly mobile spiders and are often moved about inadvertently by humans. Some native spiders (e.g. cob-web weaving theridiids) prey upon wandering mature males. Additionally, some parasitoid insects will infest some egg sacs but parasitism and predation will not have a large effect upon established populations of *Tegenaria* spiders. Population control in small areas may best be effected by examining suitable habitat for adults, immatures, and egg cases and destroying these and removing webbing.

**Bennett, R. G.** 2002. Hyperbole and hysteria on the path to enlightenment - a review of current *Tegenaria* projects of relevance to Canadian arachnologists. *Boreus* 22(1):9-16.

Bennett summarised and discussed past and current research on the medical importance of *T. agrestis* (see Binford 2001) and the distribution and abundance (see Exline 1951, Roth 1968, Vetter *et al. in press*), life history and species interactions (see Senecal 2002), and taxonomy (see Roth 1968) of *T. agrestis* and *T. duellica*. Bennett first observed that, although these two species are generally considered to be synanthropic in North America, in the Georgia Lowlands of coastal British Columbia *T. duellica* is very common in reasonably natural habitats such as open marine beaches and shorefronts, Garry oak meadows, rock outcrops, and openings in dry Douglas-fir forests. *Tegenaria agrestis* occasionally is found in these habitats as well (e.g. at Island View Beach near Victoria). *Tegenaria duellica* and, to a lesser extent, *T. agrestis* appear to be successful alien invasive species in the Georgia Lowlands. Although anecdotal evidence suggests that, where the two species are sympatric, *T. duellica* will displace *T. agrestis*, at several sites both species have been found apparently peacefully coexisting. Bennett concluded that mythology and misinformation have become associated with the two species because

- a) *T. duellica* is a large spider,
- b) *T. agrestis* has a (probably undeserved) nasty medical reputation, and
- c) both are common around homes.

Current research may help dispel the mythology. Further study of these species will aid in understanding the biology of invasive species and the distribution and abundance of animals.

**Binford, G. J.** 2001. An analysis of geographic and intersexual chemical variation in venoms of the spider *Tegenaria agrestis* (Agelenidae). *Toxicon* 39:955-968.

Although it is considered harmless in its native range, *T. agrestis* is popularly believed to be medically important in North America (its venom supposedly can cause slow-to-heal necrotic lesions). Binford summarised four possible reasons for this: North American specimens

- a) may have evolved new venom components not found in European specimens,
- b) are synanthropic and therefore may be more likely to encounter humans,
- c) may have unique microbial necrotizing agents associated with their mouthparts, or
- d) may have been falsely accused.

Binford found no significant differences between the venoms of North American and European populations of *T. agrestis*. She concluded that there is no convincing evidence to show that the bite of *T. agrestis* is medically important or even that the spider is likely to bite humans.

**Buckle, D. J. and R. L. Randell.** 1995. The giant house spider in Saskatchewan. *Blue Jay* 53(2):98-100.

This short note discussed the 1994 discovery of a small, localised population of *T. duellica* (called *T. gigantea* by the authors) in a house near Saskatoon Saskatchewan. The history of its introduction to North America and subsequent spread is presented as well as a partial listing of collection records from Alberta and across southern British Columbia.

**Crawford, R. and G. H. Locket.** 1976. The occurrence of *Tegenaria gigantea* Chamberlin & Ivie (1935) in North America and Western Europe. *Bulletin of the British Arachnological Society* 3(7):199.

Primarily an academic discussion of nomenclature, this short note presented then-current distributional records (southern Vancouver Island and Vancouver south to Tacoma) for *T. duellica* (called *T. gigantea* by the authors). Crawford and Locket noted that North American specimens of *T. duellica* are generally but not always found indoors and concluded that the species was actively expanding its range in North America and probably first appeared in the Seattle area around 1960.

**Crawford, R. and D. K. Vest.** 1988. The hobo spider and other European house spiders. *Burke Museum Educational Bulletin* No. 1.

Crawford and Vest provided an informational bulletin highlighting *T. agrestis* for the general public. Descriptions and identification of the three *Tegenaria* species associated with homes in the Pacific Northwest - *T. agrestis*, *T. domestica*, and *T. duellica* (named *T. gigantea* in this paper) - are provided along with a discussion of the supposed medical importance of *T. agrestis* and an excellent section on the importance of spiders and the pros and cons of control (primarily in and around homes) of unwanted spider populations. The general theme of this section is "it is not realistically possible to eradicate them completely." Pesticides registered for use against spiders will not affect eggs which are protected within several layers of silk. Chemical controls will probably have best effect in late spring or early summer after eggs have hatched and before mating and production of new egg sacs begins. Available chemical controls are non-selective and will have detrimental effects on native species if used.

**Exline, H.** 1951. *Tegenaria agrestis* (Walckenaer), a European agelenid spider introduced into Washington State. *Annals of the Entomological Society of America* 44(3):308-310.

Exline was the first to notice *T. agrestis* in the Puget Sound area and mistakenly described it as a new species (*T. magnacava*) in 1936. Her 1951 paper acknowledged the

mistake and provided a new set of diagnostic drawings of the male and female genitalia.

**Leech, R. & M. Steiner.** 1992. *Metaltella simoni* (Keyserling, 1878) (Amaurobiidae) new to Canada, and records for *Tegenaria gigantea* Chamberlin & Ivie, 1935 (Agelenidae) in Alberta and British Columbia (Arachnida: Araneida). The Canadian Entomologist 124(2):419-420.

This simple note summarised Canadian (BC & AB) and USA (WA) records for *T. duellica* (as *T. gigantea*) and discussed specimens collected in the Edmonton area in the late 1980's and early 1990's.

**Roth, V. D.** 1968. The spider genus *Tegenaria* in the Western Hemisphere (Agelenidae). American Museum Novitates 2323:1-33.

Although out of print and containing dated and some inaccurate information, this is the best available comprehensive taxonomic guide to the North American species of *Tegenaria*. Roth provided taxonomic information for *Tegenaria* and all its endemic and introduced species known to occur in North America up to the late 1960's. Four species are described as introductions to the North American fauna: *T. agrestis* (Walckenaer) - the "hobo spider," *T. domestica* (Clerck) - the "house spider," *T. duellica* Simon (mistakenly named *T. saeva* Blackwall in this paper) - the "giant house spider," and *T. pagana* C. L. Koch. Of these four, all but the latter are established in the Pacific Northwest States and/or British Columbia. *Tegenaria agrestis* was described as occurring "in buildings and greenhouses" in Seattle and Spokane Washington, Corvallis Oregon, and Moscow Idaho. From specimens of *T. duellica*, *T. agrestis* spiders are distinguished by the following characters:

- a) in the male palp, the presence of a double pronged conductor and a relatively "stubby" palp tip,
- b) ventrally on the female's abdomen, a variably triangular or trapezoidal reproductive opening, wider than long and with thickened, membranous edges and bordered posteriorly by a pair of inconspicuous spurs,
- c) sternal plate never with paired, lateral pale spots, and
- d) coxae usually unmarked ventrally except for "upper inner thigh" area of hind coxae which typically possess darkened areas.

Also, specimens of *T. agrestis* tend to be smaller (averaging about 10-15 mm in total length), paler (golden brown), and with less distinct dorsal abdominal chevron patterning than specimens of *T. duellica*. In the late 1960's, *T. duellica* was apparently only known from Vancouver and southern Vancouver Island (Wellington and Sydney) in British Columbia and had not yet been found in the Pacific Northwest States. From specimens of *T. agrestis*, *T. duellica* spiders are distinguished by the following characters:

- a) in the male palp, the presence of a single pronged conductor and an elongated palp tip,
- b) ventrally on the female's abdomen, a bluntly triangular reproductive opening, longer than wide and overlain by a pair of heavy, broad and conspicuous spurs,
- c) sternal plate usually with three to four pairs of distinct pale spots laterally, and
- d) all coxae usually marked ventrally with one or two darkened areas.

Specimens of *T. duellica* tend to be considerably bigger, darker and with more distinctive

abdominal patterning than specimens of *T. agrestis*. In all cases, distinguishing the species is most reliably done using genitalic characters (a and b above) as size, colour and patterning characters exhibit great variability and require experience to be used for species identification.

**Roth, V. D. and P. L. Brame.** 1972. Nearctic genera of the spider family Agelenidae (Arachnida, Araneida). *American Museum Novitates* 2505:1-52.

Provides keys, descriptions, diagnoses, and other taxonomic and natural history information for *Tegenaria* and related spider genera (including *Agelenopsis*). *Tegenaria* species are separated from similar spider species by the presence in *Tegenaria* of eight eyes in two straight to moderately downcurved eye rows (when viewed from in front of spider) and feathery hairs on the legs and body (visible at 40-50x magnification).

**Senecal, J.** 2002. Observations on the biology of the giant house spider, *Tegenaria duellica*, and the hobo spider, *Tegenaria agrestis*, at Island View Beach, Victoria, B.C. Unpublished undergraduate "Directed Studies" thesis. University of Victoria, Victoria, BC.

This study, done over the winter months of 2002, was the first to examine the biology and interactions of *T. agrestis* and *T. duellica* as invasive species in Garry oak ecosystems and attempted to determine the relative abundance of the two species and aspects of their life history. Through observation and measurement of living immature and mature specimens at Island View Beach, Victoria, Vancouver Island, Senecal concluded that, during the winter of 2002 at the study site:

- a) most mature and immature *Tegenaria* spiders could be identified to species using a combination of sternal, coxal, and colour characters,
- b) adults of both species were about equally abundant but immature specimens of *T. duellica* were nearly seven times more abundant than those of *T. agrestis*, and
- c) several size classes of immatures of both species were present indicating that both likely take more than one year to reach maturity.

**Vetter, R. S. and A. Antonelli.** 2002. How to identify (or misidentify) the hobo spider. Website: [http://pep.wsu.edu/pdf/PLS116\\_1.pdf](http://pep.wsu.edu/pdf/PLS116_1.pdf). Accessed: December 3, 2002.

This Washington State University extension education website provides a detailed, photographically illustrated guide for the identification of the three introduced synanthropic species of *Tegenaria* funnel-web spiders (*T. agrestis*, *domestica*, and *T. duellica*) found in Washington. Geared towards persons with "limited arachnological skills," initial sections outline the typical identification difficulties encountered by non-specialists (and how to overcome them) and explain basic spider anatomy in an easily understood format. Subsequent sections lead users through increasing levels of technical skill from very basic (determining "what is NOT a hobo spider") to advanced (using a microscope to identify *Tegenaria* specimens through comparative examination of adult sexual characteristics).

**Vetter, R. S., A. H. Roe, R. G. Bennett, C. R. Baird, L. A. Royce, W. T. Lanier, A. L.**

**Antonelli, and P. E. Cushing.** *in press.* Distribution of the medically-implicated hobo spider (Araneae: Agelenidae) and a benign congener, *Tegenaria duellica* in the United States and Canada. *Journal of Medical Entomology.*

This is the only study to date that looks critically at the natural history of *T. agrestis* and *T. duellica* in North America. The authors compiled data from museum records and specimens collected by themselves and by canvassing reliable pest control specialists from across the Pacific Northwest States. From these data, the authors mapped the current (2001) ranges of both species, discussed aspects of their biology, and determined their relative distribution and abundance. In 2001, *T. agrestis* occurred from southern British Columbia to southern Oregon and eastward to central Montana, western Wyoming, and northern Utah. Currently it is generally rare west of the coastal mountain ranges but common inland. At the same time, *T. duellica* occurred across southern British Columbia and south along the coast into southern Oregon. It is only abundant west of the coastal mountain ranges and is rare elsewhere. The two species appear to be sympatric only at coastal localities - there *T. duellica* is usually numerically dominant although the reasons for this are unclear. Most maturation of new adults occurred in late summer with mating and egg sac production continuing through the fall. Adult males were found only from late summer to early fall. Adult females of both species were encountered from late spring through early winter. The case for the medical importance of *T. agrestis* is likely overstated.