USAG Bavaria

Wildlife & Health Handbook

What to do when wildlife meets daily life.

Environmental Division

https://www.facebook.com/USAGEnvironmental

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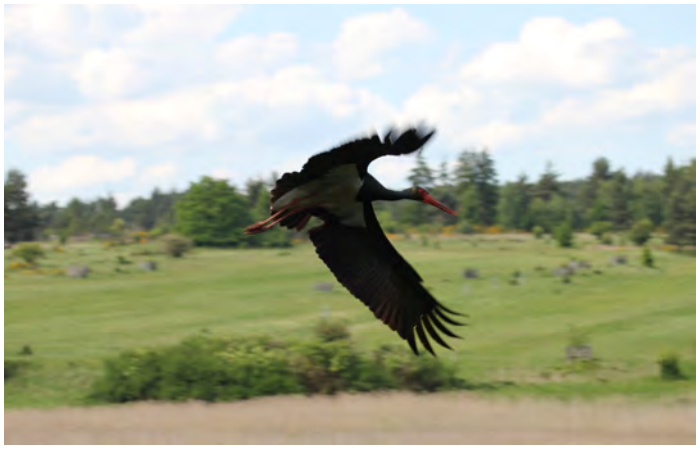
The Grafenwöhr Training Area.

Preface

Throughout Germany, military installations provide ideal environments for many endangered plant and animal species. In fact, military training areas provide some of the most valuable land in the European NATURA 2000 network.



Military training activities create diverse habitat structures, with shooting ranges and exercise areas providing shelter and protection for many rare species.

Lack of farming activities and large, uninhabited regions make military training areas ideal shelters for protected species like the yellow-bellied toad, the Bechstein's bat, and several bird species.

The key to ensuring compatibility between military training and nature protection is education and awareness.

This handbook provides fascinating insights into the flora and fauna present at USAG Bavaria, how you can help protect them, and how to minimize risks when you encounter plant or animal species associated with health hazards (boxes marked with ⚠ give you detailed information about potential health risks).

Non-Native Species

Giant hogweed can reach a height of up to 5.5 m (18 ft).

Giant hogweed

Giant hogweed (*Heracleum mantegazzianum*, Ger.: Riesen-Bärenklau) is a perennial (i.e., living for several years) herb. A native to the western Caucasus region, it was introduced to Central Europe in the 19th century for ornamental purposes and as a food source for bees. It has hollow stalks and buds with numerous white flowers clustered in an umbrella-shaped head growing up to 3.5 m (11.5 ft) wide. It flowers from June to August.

Giant hogweed is a **phototoxic plant**. The sap released by breaking the plant or brushing against it, in combination with sunlight and moisture, **can cause severe burns** within 24 to 48 hours. Therefore, giant hogweed must be avoided, especially by children. Removal should only be conducted by professionals wearing protective clothing.

Basic facts

Non-native species (neophytes) are plant species that are brought out of their geographical range by humans and are able to reproduce in new distribution areas. The relocation can happen intentionally, via planting ornamentals, or unintentionally, via seed transport on things like clothing or animals. Non-native species often lack competitors in their new distribution areas, because of this the plant species can spread quickly and potentially become an invasive plant. This can cause negative effects on human health, the economy or other plant species. Therefore, non-native plant species should never be released into the wild.

Japanese knotweed

Japanese knotweed (*Fallopia japonica*, Ger.: Japanischer Staudenknöterich) is a vigorously growing herbaceous perennial native to East Asia. Its large underground network of rhizomes (a type of plant root) make it a difficult plant to eradicate and its rapid growth can damage infrastructure such as concrete foundations, buildings, flood defenses, roads, and retaining walls. Sightings should be reported so that adequate measures can be taken.

Typical growth form of Japanese knotweed.

Himalayan balsam often grows along watercourses.

Himalayan balsam

Himalayan balsam (*Impatiens glandulifera*, Ger.: Drüsiges Springkraut), a native to the Himalayas, is a tall-growing annual plant, reaching 2-3 m (6-10 ft) in height. Its aggressive seed dispersal, coupled with high nectar production, which attracts pollinators, often allows it to outcompete native plants.

The plant tolerates low light and will gradually shade out and eventually kill off other nearby plants. If it is planted in gardens, care must be taken to ensure that it does not spread into the wild.

It prefers damp, nutrient-rich soils and grows commonly along waterways. It promotes soil erosion along riverbanks and its seeds can be dispersed up to 7 m (22.9 ft) by water movement along rivers and creeks.

One positive effect is that Himalayan balsam serves as a food source for bees late in the year when most other food sources are not available. The need for eradication is therefore doubted by some conservationists.

The pollen of common ragweed has a high potential to cause **allergic reactions** of the eyes and respiratory tract. This pollen is usually released during late summer or early fall resulting in a **lengthened pollen season for allergy sufferers**. To eradicate common ragweed, it should be dug out before it blooms, i.e., before the beginning of June. Appropriate protective clothing should be worn when handling and removed plants should be disposed of in a closed plastic bag in the refuse container.

Common ragweed

Common ragweed (*Ambrosia artemisiifolia*, Ger.: Beifußblättriges Traubenkraut) is a summer annual plant and native to North America. It appeared in Germany in the Hamburg area in the 1860s. Since the beginning of the 1990s, a rapid spread throughout Germany has been observed.

The plant appears on disturbed areas, but most frequently in gardens since birdseed contaminated with common ragweed is the main source of its dispersal. Each plant produces about 60,000 seeds which germinate up to 40 years later, and can be transported by wind for hundreds of kilometers, underlining its invasive potential.

Common ragweed has a high allergenic potential.

Common Foxglove

Common foxglove flowers.

Habitat

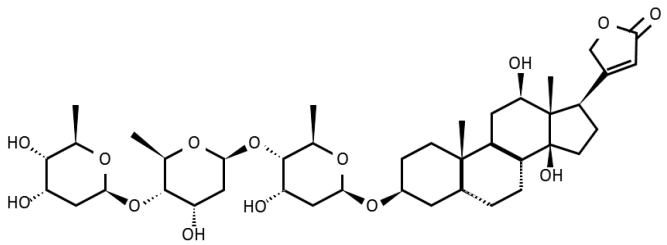
Common foxglove (*Digitalis purpurea*, Ger.: Roter Fingerhut) is a herbaceous biennial plant native throughout most of temperate Europe, with multiple cultivars used as an ornamental garden plant. It was first known by the Anglo-Saxon name foxes glofa (the glove of the fox), since its flowers look like the fingers of a glove. The name is thought to be related to a northern legend in which fairies gave the flowers to a fox to put on its paws so that its footfalls were muffled while it hunted for prey.

Common foxglove can be found in woodland and gardens as well as along roadsides and hedgerows. It grows best in well-drained, loamy, acidic soil but can survive in sites with little soil such as rock crevices.

Basic facts

Common foxglove leaves are oval-shaped and hairy with a toothed margin. During the first year, the plant appears as a basal rosette. As the plant ages, it exhibits alternate leaf arrangement on its stem. The flowering stem develops in the second year, growing between 1-2 m (3.3-6.6 ft) tall. It blooms from June to September and produces 20 to 80 tubular, bell-shaped, purple-pink flowers with darker colored spots on the lower lip of the flower. The commercial hybrids can produce many different colors such as white, off-white, pink, purple, yellow, and deep violet. The flowers attract bumblebees, which are the main pollinators of this species, as well as moths and honeybees. The fruit is a capsule with many seeds and changes color from green to black when ripening. A common foxglove can produce around 2 million seeds during its lifetime.

A stand of common foxglove along a roadside in the forest.



digoxin

The digoxin molecule was first isolated in 1930 from the foxglove plant. Today, digoxin is rarely used in the treatment of heart conditions.

Common foxglove in medicine

The leaves of common foxglove contain digitoxin, digoxin, and other cardiac glycosides, which affect the heart. The plant's heart-protective properties were discovered in 1775 by the English doctor William Withering. It was originally used for congestive heart failure and atrial fibrillation.

Digitoxin and digoxin from the plant can slow down the heartbeat, increase the strength of heart contractions, lower the amount of oxygen the heart needs to work, and prevent edema by facilitating removal of excess water from the body.

Common foxglove was the original source of the drug Digitalis. However, the plant has been replaced as a heart medicine because the therapeutic and lethal doses are very close, making it **one of the most dangerous plants in the world.**

In folk medicine, common foxglove was taken to treat abscesses, boils, headaches, paralysis, and stomach ulcers. It has not been proven to be an effective treatment for any of these ailments.

Common foxglove's sap, flowers, seeds, and leaves are all **poisonous, even in small doses,** so being able to recognize and avoid ingesting this plant is important. It is most toxic just before the seeds ripen. It tastes spicy or bitter and smells bad. Consumption can result in **vomiting, headache, diarrhea, loss of appetite, convulsions, irregular heartbeat, and even death**. During the early stages of growth, the plant can be mistaken as comfrey or plantain. **Making this mistake can be very dangerous and deadly.**

The common comfrey (*Symphytum officinale*, Ger.: Echter Beinwell) can be distinguished from common foxglove by their untoothed, smoother leaf edges. The great mullein (*Verbascum thapsus*, Ger.: Kleinblütige Königskerze) also has untoothed leaves and is hairier than common foxglove.

If you accidentally ingest any part of common foxglove, contact emergency services immediately.

***Digitalis purpurea* drawing.**

Common Nettle

Common nettle is a herbaceous plant found across the globe.

Nettle sting

"Stinging Nettle" gets its name from the stinging rash it causes when the skin makes contact with the plant. The leaves and stems are covered with small, delicate, and hollow hairs. These hairs act like needles, causing mechanical irritation and inject histamine, acetylcholine, serotonin, and formic acid into the skin. The rash appears as itchy, red, and swollen skin with raised bumps or hives that are often light in color.

The irritating reactions can be felt for about 12 hours. Although the rash is unpleasant, the contact with stinging nettle is **not dangerous** and requires **no medical treatment**.

Rash after contact with stinging nettle.

Basic facts

Common nettle (*Urtica dioica*, Ger.: Brennnessel), also known as stinging nettle, is a common herbaceous perennial plant found in Europe, Asia, and North America. It grows up to 2 m (78 in) in height on phosphate and nitrogen-rich soils along trails, fields, forests, hedgerows, and wastelands. It is also typically associated with human habitation and disturbed environments.

Nettle starts growing in the spring and blooms from June to September. The tall square stems host paired oval-shaped leaves, with serrated edges, that are covered in tiny hairs. The flowers are tiny, set in greenish-white clusters along the upper end of the stem.

The plant has a long history of use in traditional medicine, food, tea, and raw material for textiles in ancient societies.

The best way to avoid the nettle's sting is to **recognize the plant, learn where it grows, and avoid it**. If contact is made, the following steps will help you relieve the itching rash:

- **Wash the skin** with soap and water as soon as possible to remove the hairs.
- If no water is available, **clean the area carefully** with a cloth.
- **Avoid scratching** and rubbing the itchy areas.
- **Apply cold compresses** and avoid hot water.
- **Antihistamine creams may relieve itching** and swelling. Hydrocortisone creams will reduce inflammation.

Similar species

The common nettle can be confused with some other species that look similar, but on closer inspection, it can be distinguished quite easily:

The white dead-nettle (*Lamium album*, Ger.: Weiße Taubnessel) looks similar to the common nettle and has similar leaves, but the white bell-shaped flowers of the white dead-nettle are its distinguishing feature. It appears in similar habitats as the common nettle, prefers semi-shade, and can be found in light woodland areas and along hedgerows, roadsides, and wastelands. The flowers and young leaves are edible and can be used in salads or cooked as a vegetable.

The white dead-nettle looks quite similar to the common nettle.

The red dead-nettle (*Lamium purpureum*, Ger.: Rote Taubnessel) looks similar to the common nettle but has easily distinguishable purple flowers. Just like the white dead-nettle, the 'dead' indicates that it has no stinging hairs. Similar to honeysuckle, sweet nectar can be sucked from the base of the red dead-nettle flowers.

Interesting facts

While the common nettle has unpleasant stinging hairs, the plant has an abundance of benefits:

- Common nettle is a **host plant to many pollinators** and other insects, and its growth is encouraged in several countries.
- The plant has also long been an **ingredient for many dishes**. Cooking the young leaves removes the irritants, leaving nutritious greens. It is typically used in soup, sautéed like spinach, in pesto, and as tea.
- It is a **traditional medicine** for ailments such as arthritis, sore muscles, hay fever, high blood pressure, and anemia.
- Nettle stems contain a **bast fiber** that was traditionally used for the same purposes as linen. Unlike cotton, nettles grow easily without pesticides.
- Common nettle is a **soil-quality indicator** to gardeners and indicates high soil fertility.

Nettle tea, an example of the culinary use of common nettle.

Bracket Fungi

Bracket fungi indicate rot in trees.

Bracket fungi

Bracket fungi are the fruiting structures of certain fungi on the trunk or main branches of standing trees. The fungal bodies appear in spring, summer, and fall. There are many different types of bracket fungi, many of which are specific to a particular host.

Bracket fungi cause decay and rot in the heartwood of trees. This rot can weaken the tree and lead to the eventual break or fall of the affected tree. On a tree, the **external symptom** of bracket fungus infection is the appearance of the bracket-shaped fruiting bodies. Visible crown thinning and dieback may also be visible in the infected individual. By the time a bracket appears, it is most likely that there has already been extensive heartwood decay and even limb loss. **Internal symptoms** include white or brown rot in the heartwood, both of which are structurally weakening. In some cases, the tree will become hollow and remain stable. However, most of the time the decay weakens the tree, making it susceptible to physical factors like strong winds, and leads to breakage.

Since gardeners are responsible for their trees, they may be liable for prosecution if damage or injury results from falling timber. **To assess tree health contact professional consultants.**

Basic facts

Fungi obtain their nutrition from decomposing organic matter such as fallen wood in a forest. Hence, they play a crucial role in recycling nutrients back into the soil. There are many types of fungi including yeasts, mildews, molds, and mushrooms. Many species are free-living in soil or water, others form parasitic or symbiotic relationships with plants or animals.

Fungi are everywhere in very large numbers - in soil, air, lakes, rivers, seas, on and within plants and animals, and even in food and clothing. Fungi are clearly distinguished from all other living organisms by their vegetative growth and nutrient intake. Nevertheless, since they rely on organic matter for nutrients and not on the sun, they are more closely related to animals than plants.

Most fungi maintain the majority of their cells underground, creating a long, wide net of hyphae. These can survive for a long time. Under favorable conditions, these underground networks form an umbrella-shaped fruit body above ground, which is commonly known as a mushroom.

The mushrooms commercially sold are grown on mushroom farms and are safe to eat. However, many mushroom species produce secondary metabolites that **can be toxic**, mind-altering, antibiotic, antiviral, or bioluminescent. Although there are only a few poisonous species, several others can **cause severe and unpleasant symptoms.** For this reason, do not eat mushrooms collected in the forest unless guided by an expert. **Never eat what you don't know.**

The white-spotted, bright red fly amanita is one of the most recognizable mushrooms.

Fly amanita

Native throughout the temperate and boreal regions of the Northern Hemisphere, the fly amanita (*Amanita muscaria*, Ger.: Fliegenpilz) has been introduced via pine seedlings to Australia and New Zealand and is now a cosmopolitan species. Arguably the most iconic mushroom species, it can be found from late summer to early winter and prefers light soils found among birch, pine, or spruce in woodland or heath habitats.

Fly amanita has a long history of being used in religion, particularly in Asia. In India and Iran, it has been used in a sacred and hallucinogenic ritual drink called Soma for over 4,000 years. It has also been the topic of a Hindu religious hymn. In Western culture, this fungus has turned up in many fairytales and is famously mentioned in *Alice in Wonderland*.

Fly amanita is poisonous and infamous for its psychoactive and hallucinogenic properties. Reports of human deaths resulting from its ingestion are extremely rare. Traditionally, the fungus was used as an insecticide. It is known to contain ibotenic acid, which both attracts and kills flies.

Uses of fungi

- Fungi are among the most widely distributed organisms on earth and are of great environmental and medical importance.
- Fungi are **essential to many household and industrial processes**, notably the making of bread, wine, beer, and certain cheeses.
- Fungi are also used for **food**: For example, some mushrooms, morels, and truffles are epicurean delicacies.
- Studies of fungi have greatly contributed to the accumulation of **fundamental knowledge in biology**, e.g., studies of baker's yeast led to discoveries of basic cellular biochemistry and metabolism.
- The **medical relevance** of fungi was discovered in 1928 when Alexander Fleming experimented with the green mold *Penicillium notatum* growing in a culture dish of *Staphylococcus* bacteria. The discovery of **penicillin** was then announced in 1929.
- Together with bacteria, fungi are responsible for **breaking down organic matter** and releasing carbon, oxygen, nitrogen, and phosphorus into the soil and the atmosphere.

Fungi come in many shapes and colors.

Carnivores

Eurasian wolf

The Eurasian wolf (*Canis lupus lupus*, Ger.: Eurasischer Wolf) is native to Europe and western Russia with a body length of 100-150 cm (3.3-4.9 ft) and a weight of 30-70 kg (66-154 lb). Females are smaller and lighter than males. Their relatively short and coarse fur can range from dark grey to dark brown. They also have white fur on their cheeks and throats. Wolves are highly adaptable and live in a variety of habitats. To settle permanently in an area there has to be a sufficient source of water and prey as well as undisturbed places for them to rear their young.

A wolf's diet consists of deer and wild boar in the winter and smaller mammals, birds, fish, amphibians, and wild fruit in summer. If prey is scarce it will eat carrion and refuse. **Conflicts can arise when wolves have easy access to unprotected livestock and trash near human settlements.**

The distribution of the Eurasian wolf in Germany, which is strictly protected according to Germany's Federal Nature Protection Law.

The Eurasian wolf is rarely encountered in the wild as it is shy and tends to avoid humans.

Wolves back in Germany

After over 150 years of local extinction, wolves are back in at least seven German states, including Bavaria. Estimates made by the Federal Documentation and Advice Center on the Wolf (DBBW) state that in 2017/2018 there were roughly 73 packs, 30 pairs and three lone wolves, in Germany. **There is at least one pair in the Grafenwoehr Training Area. A singular wolf has also been observed in the Hohenfels Training Area.** Since the renewed presence of wolves, no attacks on humans have been reported.

Encounter with a wolf

In the unlikely event that a wolf is encountered, follow these safety guidelines from the Federal Agency for Nature Conservation (BfN):

- Stand still, **keep your distance**, stay calm.
- Slowly **back away**, speaking loudly.
- If the wolf does not run away: **shout, clap, make yourself appear larger.**
- **Keep your dog on the leash** and close to you.
- **Do not** attract or feed wolves.
- **Report** the encounter to the authorities (military police or German police).

Red fox on the hunt for mice. Rabies, which is associated with red fox, is nearly eliminated in Germany and only seldom found in the wild.

Red fox

The red fox (*Vulpes vulpes*, Ger.: Rotfuchs) is the only occurring fox species in Germany and belongs to the canine family (Canidae). They can weigh between 5-7.5 kg (11-16.5 lb) and are 90-120 cm (3-4 ft) long depending on the length of their tail. The fur is orange to red-brown above and white below.

Red foxes reproduce once a year with an average litter size of four to six "kits" or baby foxes. As omnivores, they have a highly varied diet. They primarily feed on small rodents, birds, reptiles, and insects. In the autumn they will also feed on fruits.

Red foxes can cause problems for humans. They have been known to disrupt garbage cans and damage gardens. It is recommended to **keep pet food inside and garbage cans closed.**

Foxes can carry rabies and **a fox bite may cause infection**. Additionally, they can carry fox tapeworms, which spread through their feces. While infection is unlikely, washing any low hanging fruits prior to eating is recommended.

Beech marten (or stone marten)

The beech marten (*Martes foina*, Ger.: Steinmarder) is a species of marten native to much of Europe and Central Asia. They are about 35-55 cm (1.1-1.8 ft) long and weigh 1-2 kg (2.4-4.6 lb). They have a grey-brown coat and a bushy tail. They feed on small mammals, insects, berries, amphibians, birds, and eggs. They have also been known to enjoy kitchen waste and pet food. They reproduce once a year with an average litter size of three to five pups.

Beech martens, as nocturnal animals, are active at night and are commonly found in urbanized areas. They are unpopular with humans because they prey on chickens, eggs, and even guinea pigs. **Be sure to not leave your smaller house pets outside, keep pet food inside, and keep garbage cans closed**.

Beech martens are well known for **chewing on vehicle cables, hoses, and insulation material.** They can cause considerable damage if your vehicle has territorial markings in the engine from a rival marten. There are ways to protect your vehicle from a marten‘s bite. Check with your mechanic or Environmental Division office.

Since the beech marten is a nocturnal animal, day-sightings are rare.

Moles, Voles, & Hedgehogs

A European mole coming out of its burrow.

European mole

The European mole (*Talpa europaea*, Ger.: Europäischer Maulwurf) has a cylindrical body and is 11-16 cm (28-41 in) long, weighing 70-130 g (2.5-4.5 oz). The eyes are small and hidden behind fur and its ears are just small ridges in the skin. The fur is usually dark grey, but white, light grey, tan, and black fur have been reported. They mainly feed on earthworms but will also eat insects, mice, and shrews. Moles spend almost all their lives underground in a system of permanent and semi-permanent tunnels. This complex network of burrows is found at varying depths in the soil and can be hundreds of meters long. They are found in habitats with soils deep enough to allow tunneling. These include arable fields, deciduous woodlands, and permanent pastures. In newly cultivated or sandy soils the mole forms shallow, temporary burrows underneath the top layers of soil that can be visible on the surface.

Mating occurs during a short breeding season in the spring (March to May). Females give birth to a single litter per year. Each litter has two to seven pups.

Moles are under special protection in Germany. Law prohibits hunting, catching, or killing them.

Moles versus humans

The European mole is widely regarded as an agricultural pest. While they can help control some insect pests and improve the fertility of the soil via aeration, their burrowing habits and raising of molehills can cause damage to farmland. Moles can move easily through the surface soil of newly cultivated and planted fields. Their movement can cause damage to the roots of young plants and can even kill them. Heavy infestation can lead to serious economic problems for farmers. Molehills can also cause damage to mowing machines and grain harvesters if run over which can result in expensive delays during the harvest. However, moles can help control some insect pests and can improve the fertility of soils by aerating them.

Concerns about the identification of burrowing animals, or possible control should be directed to the DPW Call Center or landlord.

Typical molehills in a row on a lawn.

In Germany, all native mammal species are protected according to Appendix I of the Federal Species Protection Act. Therefore, Article 44 of the Federal Nature Conservation Act prohibits the hunting, catching, injuring, or killing of these animals.

A common vole foraging in a field.

Common vole

The common vole (*Microtus arvalis*, Ger.: Feldmaus) is one of the most common mammals in central Europe. Common voles are 12-16 cm (4.5-6 in) long and weigh 18-40 g (0.6-1.4 oz). Their coat is yellowish-grey above and white or rusty yellow below. It inhabits fields, meadows, and pastures. It mainly eats grass, herbs and seeds, but will feed on agricultural crops as well. Females can reproduce up to three times per year with 3-8 pups per litter.

Common voles maintain aboveground runways, which expand like a railway system throughout their entire home range. Voles are rarely seen outside these runways. Population density varies seasonally and exhibits a considerable long-term fluctuation that shows typically three-year or five-year cycles. Densities can range from 100 individuals per hectare to 2,000 individuals per hectare. The vole is the main food source for many predators including the kestrel, buzzard and long-eared owl, which helps reduce population size. Ground predators are mainly weasel, otter, fox, and boar.

European hedgehog

The European hedgehog (*Erinaceus europaeus*, Ger.: Braunbrustigel) is a common and widely distributed species that can survive across a wide range of habitat types. It is a favorite in European gardens, both for its endearing appearance and its preference for eating a range of garden pests. They are 22-30 cm (8.5-12 in) long and weigh 400-1,500 g (14-53 oz) depending on the time of year. They are brown and covered by up to 6,000 brown and white spines. This species is largely nocturnal and tends to hibernate in winter. They are solitary in nature and mature males will behave aggressively towards each other.

Hedgehogs are omnivorous, feeding mainly on invertebrates. Its diet includes slugs, earthworms, beetles, caterpillars, and other insects. Some fruits and mushrooms may supplement their diet. Females produce one litter in the spring with four to six hoglets.

If alarmed, the hedgehog will roll into a ball to protect itself. Potential predators are repelled by the spines, although the spines can not be ejected.

A European hedgehog in a garden in spring.

Hare, Deer, & Boar

European hare

The European hare (*Lepus europaeus*, Ger.: Feldhase) is a native species found in open and semi-open habitats throughout Europe and Asia. Predominantly nocturnal animals, they can be found sleeping on grass during the daytime and emerging at sunset to graze on grasses, herbs, and sometimes twigs.

They have golden-brown fur with a pale belly, a white tail, characteristic long black-tipped ears, and long powerful hind legs. They are 50-70 cm (20-27.5 in) long and weigh 2-5 kg (4-11 lb). The average lifespan of a European hare varies between two to four years.

Between February and September, a female hare can give birth to about three litters of two to four young, called leverets. Leverets are typically born fully furred with their eyes open and are able to hop around after birth. The mother will leave her litter during the day, returning in the evening to nurse them. It is important not to touch any hares or leverets when found, as the human smell might lead to rejection of the leveret by its mother.

With its powerful hind legs, the European hare has the ability to jump five to seven meters (16-23 ft) and run as fast as 75 kilometers an hour (46 mph).

The European hare is not a protected species but due to habitat loss as a result of agricultural intensification and the increasing fragmentation of landscapes, such as highway construction, the European hare is becoming increasingly rare in Germany.

Due to agricultural intensification, European hares are more frequently encountered in urban areas, where they are also safe from hunting.

Roe and red deer

Roe deer (*Capreolus capreolus*, Ger.: Reh) are the smallest while red deer (*Cervus elaphus*, Ger.: Rothirsch) are the largest deer species found across Europe. Both are found in and along the edges of woodland. Sometimes roe deer can be found in field, meadows, and urban fringe areas.

Both species are herbivores and feed on grasses, herbs, leaves, tree shoots and buds, as well as fruits. While rarely encountered in the rest of Germany, red deer are comparably common and easy to observe in the Grafenwoehr Training Area.

The red deer species on Grafenwöhr Training Area is the largest deer species in Europe.

Wild boar

The wild boar (*Sus scrofa*, Ger.: Wildschwein) is an ancestor of the domestic pig. As a native European species, it is found across a variety of different habitats, ranging from deciduous and mixed forests to agricultural fields. Boars are very adaptable and occur frequently in fringe areas of urban settlements. Feral populations root and forage in areas where they may conflict with human activities, such as in picnic areas, on golf courses, football pitches, and village greens.

Wild boars have dark brown to black fur with bristly hair. With a size of 1.2-1.7 m (3.9-5.6 ft) and a weight of up to 200 kg (441 lb), they are one of the heaviest animals in the Grafenwoehr Training Area.

Wild boars are omnivores and their diet includes everything from leaves, roots, and fruits of trees to grasses, mushrooms, insects, snails, birds, and small mammals. They use their long snout to plough up the ground and forage for food. In harsh winters, when the ground is too hard, they are not above ransacking garbage bins.

Wild boars enjoy rubbing their body against tree trunks, and in summer they wallow in mud to cool down and get rid of parasites.

Their mating season is from November until January and in early spring, the female births an average of six piglets.

It is important not to get in between a mother boar and its young, as the female can become very aggressive while defending her young.

Wild boars can be very dangerous to humans. Male wild boars are ferocious creatures made all the more dangerous by their swiftness, low center of gravity, muscular shoulders, and sharp tusks - which they can use to tear open a hunter's leg, causing severe bleeding.

If you encounter a wild boar:

- Be calm and **move slowly away** from the animal. Do not approach or attempt to feed the animal.
- **Keep a safe distance** and do not corner or provoke the animal, e.g., using a flash while taking pictures of it.
- If you see adults with young piglets, **leave them alone.**
- **Actual attacks on humans are rare and a boar will try to warn you before attacking.**

Wild boars in the forest.

Bats

Sign indicating a bat quarter.

Conservation status and threats

All species of bats found in Germany are on the Red List of Threatened and Endangered Species and as such are legally protected. Many are in threat of extinction due to habitat loss and agricultural intensification.

Available habitats, such as attics, sheds, and church spires, have declined due to refurbishment efforts. The increased use of insecticides and herbicides in agriculture and private gardens reduces the number of insects that are available as a food source for bats. Contaminated insects can poison bats when ingested.

Wind turbines also pose a threat to bats, as they are not able to locate the rotor blades of the turbines fast enough.

Another negative impact is artificial light. Since bats are nocturnal animals and adapted to a life in darkness, artificial lighting of bat roosts, access points, or foraging pathways can be extremely disorienting.

Basic facts

There are approximately 25 bat species in Germany occurring in habitats ranging from woodlands to open landscapes to water bodies. Bats are mammals, whose forelimbs form webbed wings, making them the only mammals naturally capable of true and sustained flight.

With a maximum size of 5 cm (2 in), the European bats are relatively small compared to bats in other parts of the world. They have large ears, small eyes, and strong teeth. Many bat species are active in twilight and at night time. During the day they sleep upside down, grasping onto a twig or board with their feet, hidden in holes of trees, or even in buildings. In autumn, bats migrate to warmer climates or hibernate in “winter quarters”. Groups of hundreds can be found in these undisturbed dark places, such as caves or attics.

European bats are specialized in catching insects in flight. They use echolocation for orientation and to find food at night. They make sounds inaudible to humans while flying. The returning echoes help them to identify the size and shape of an insect or an upcoming obstacle. As flying uses up a lot of energy, bats eat a lot. A common pipistrelle can eat more than 3,000 insects in one night, including mosquitoes.

A bat found on the ground during daylight hours is likely to be in trouble. Bats are wild animals and therefore, if in pain or panic, may try to defend themselves. Use precaution, wear gloves (although, in Germany, there have been only minimal cases of rabies documented in bats) and **handle bats as little as possible**. It is best to carefully put them in a cardboard box and leave a little opening for the bat to escape at night.

Greater mouse-eared bat

Greater mouse-eared bats (*Myotis myotis*, Ger.: Großes Mausohr) are one of the largest European bats, weighing up to 45 g (1.6 oz). Unlike other bats, they do not capture prey by echolocation in flight. Instead, they pick it up from the ground, locating the prey passively by listening for the noises produced by creatures such as beetles and centipedes. Thus, they use echolocation only for spatial orientation.

These bats prefer open landscapes where they can hunt easily and are commonly found in parks and woodlands. They live in warm attics, towers, and cellars and hibernate in caves, mines, or cellars. In the winter quarters, between 100 and 1,000 animals will gather together.

Common pipistrelle

Common pipistrelles (*Pipistrellus pipistrellus*, Ger.: Zwergfledermaus) are the smallest and most common bat species in Europe. They feed in a wide range of habitats from grasslands to urban areas, yet they prefer to forage along woodland edges and isolated tree lines. They roost in tree holes, bat boxes, or even the roof spaces of houses, often in small colonies.

Greater horseshoe bat (*Rhinolophus ferrumequinum*) - one of the largest bats in Europe.

How to help bats

Multiple factors contribute to the threat of bat species. If you want to be a bat friend, you can start by implementing the following actions:

- **Reduce pesticides**: All bats in Germany eat insects. Therefore, you can help by reducing the use of pesticides in your garden.
- **Promote natural habitats**: Where they don't create a hazard, leave dying and dead trees standing. These are favored roosting sites for bats.
- **Build a pond**: Many insect species are associated with water. By building a pond in your garden you contribute to the food supply for bats.
- **Do not disturb bats**: If you have bats in your attic, or a location not regularly used, do not disturb them.
- **Install bat boxes** in your garden or on your house façade to increase the number of roosting sites.
- Be a bat ambassador: Learn more about bats and share it with your friends and family.

For any further questions, contact the Environmental Division.

Bat boxes can present alternate roosting sites for bats, where natural structures are rare.

Birds on Buildings

The removal of bird nests, like this barn swallow's nest, is forbidden by German nature protection legislation.

Droppings and health risks

Droppings are more likely to create aesthetic problems than health risks. **Health risks from birds are often exaggerated.** Protection measures such as installing a wooden plank below the nest will minimize the problem. While birds can suffer from some diseases that can also affect humans, **the actual risk of disease transmission from casual contact with birds or their droppings is minimal.** If there is a small accumulation of droppings from a bird's nest, it can be cleaned up with soap and water. If large quantities of droppings are present, contact DPW Call Center to have it cleaned.

Protection/Legal status

Most bird species in Germany are protected, as are their nests. According to Article 20 Paragraph 1 No. 1 of the German Federal Nature Conservation Act (BNatSchG), it is **forbidden to remove, block, or damage nests, broods, dwellings, or shelter sites.** These prohibitions are in effect year-round, i.e., even empty nests outside of the breeding season are protected. To consult on removing nests, contact DPW Call Center.

Basic facts

A number of bird species nest on balconies, building ledges or in the nooks and crannies of houses. Observing these nests can be a source of enjoyment and species that eat insects, such as swifts and swallows, help with pest control.

Nest identification can be tricky, but with a bit of practice, everyone can learn the clues that distinguish different nests. The easiest way to identify a bird's nest is by identifying the birds building and using said nest. Moreover, there are also characteristics about the nest, such as its location, size, shape, building material, and construction that help in identifying the species. Several websites have articles with images of typical garden bird nests that can help you with identification.

A negative aspect of birds nesting on buildings is that nesting behavior can cause a mess of bird droppings. Additionally, woodpeckers have been known to create holes in building facades because, to them, it feels and sounds like a tree. These holes are then occupied by other bird species. The holes can be covered up, but only if they are empty.

Bird droppings may not be nice to look at but their impact on human health is quite low.

Swifts

The common swift (*Apus apus*, Ger.: Mauersegler) looks similar to the barn swallow, but is not closely related to it.

Swifts have very short legs, which they use primarily for clinging to vertical surfaces. They never settle voluntarily on the ground, where they would be vulnerable to accidents and predation. Except when nesting, swifts spend their lives in the air: they feed, drink, often mate, and even sleep while in flight. Some individuals go 10 months without landing.

Common swift in flight.

Other species

There are many bird species that use buildings as nesting sites, including various pigeons, house sparrows, European starlings, barn owls, and jackdaws.

House sparrows and European starlings, which are both invasive species in the US, are native to Europe and Asia and therefore quite common in Germany.

Some species of pigeons can breed at any time of the year, including in winter.

Swallows

Swallows are songbirds with a slender, streamlined body, long, narrow wings and small, weak feet. The streamlined body shape helps them to fly very quickly and precisely to catch insects for food. In Europe, swallows are migratory birds, breeding in Central Europe from April to October, and spending the remaining part of the year in Africa.

The common house martin (*Delichon urbicum*, Ger.: Mehlschwalbe) and barn swallow (*Hirundo rustica*, Ger.: Rauchschwalbe) are the most commonly observed swallows in Germany.

Kestrels

The common kestrel (*Falco tinnunculus*, Ger.: Turmfalke) is a bird of prey and the most common falcon in Central Europe. The species is widespread in Europe, Asia, and Africa.

They are small compared to other birds of prey but larger than most songbirds. When hunting, the common kestrel can be observed hovering about 10-20 m (33-66 ft) above the ground. Once prey is sighted, the bird makes a short, steep dive towards the target.

Common kestrel landing in a field.

Bird Feeding & Nestlings

Nestlings

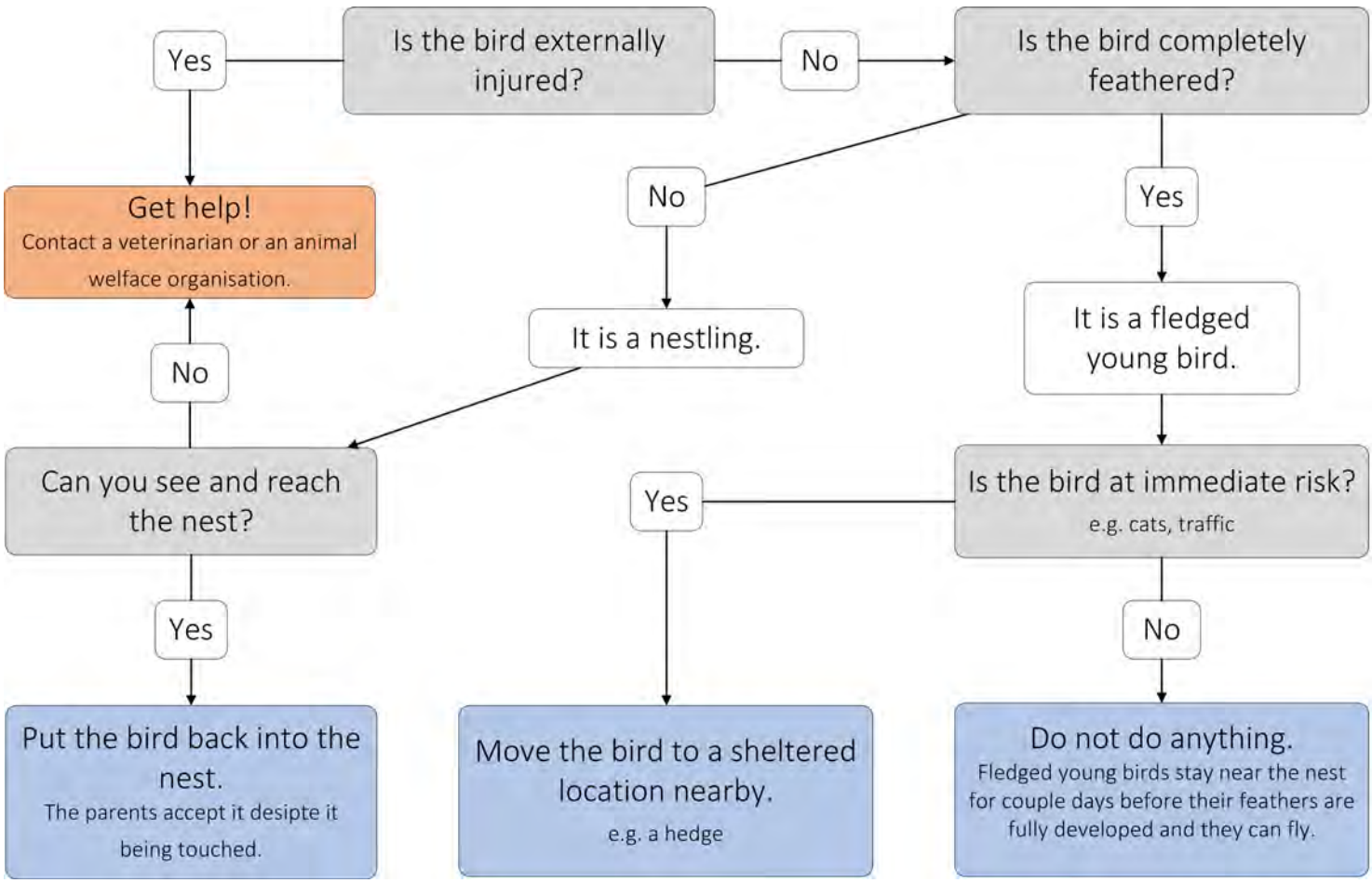
Birds that nest under the eaves of buildings are particularly affected by high temperatures, sometimes making the nest unbearable for the young birds, forcing them to flee by falling.

Nestlings can also be blown out of the nests by storms. Swifts and swallows - unlike other bird species - do not care for their young after leaving the nest.

If you find a nestling, follow the steps indicated below. If help is needed contact the Environmental Division or an animal welfare organization, e.g. the Landesbund für Vogelschutz (LBV) service hotline at 09174-4777574-34/35.

Black redstart (*Phoenicurus ochruros*) feeding its chick.

What to do if you find a bird - Step by step



Feeding

Although winter feeding benefits birds most, food shortages can occur at any time of the year. Increased agricultural use of pesticides and habitat loss have caused a decline in the natural food supply. Feeding all year round will give birds a better chance to survive food shortages, but also bears the risk of spreading diseases at feeding stations.

Feeders should only be viewed as supplements to natural foods. Humans can better provide for wildlife by cultivating near-natural gardens with diverse structures, rich in species and blossoms. This provides sufficient food for a wide variety of bird species including seed-eaters and insectivorous species.

Custom-made feeding devices help to avoid the transfer of diseases through droppings and mold in bird food.

Spring and summer

The overall benefits of feeding in the spring and summer are still up for dispute. On the one hand, birds require high protein foods for breeding and molting season and food shortages might occur during prolonged chilly or rainy conditions. At the same time, feeding stations can potentially add to the spread of diseases during higher temperatures. If you want to feed birds in summer, clean your bird feeders regularly and only use selected foods like black sunflower seeds or mealworms.

Another way to help birds during hot weather, is to provide fresh water. Place a shallow dish no more than two inches deep, of freshwater out in a shaded part of your yard or balcony. To avoid the transfer of disease ensure that the water is changed daily.

Berry-producing shrubs like the wild privet (*Ligustrum vulgare*) provide birds with high-energy food in autumn and winter.

Autumn and winter

At this time of year, put out food and water on a regular basis. If the weather is severe try to feed twice a day: in the morning and early afternoon. Birds require high-energy (high-fat) foods during cold winter weather to maintain their fat reserves to survive. Use only good-quality bird food.

General feeding advice

Always adjust the quantity given to the demand, and never allow uneaten food to accumulate around the feeders. Clean your bird feeders regularly with hot water. Human food leftovers are not suitable for birds. Birds are usually “early risers”, so try to fill your feeders in the evening. Once you establish a feeding routine, try not to change it as the birds will become used to it and time their visits accordingly. In order to protect birds from predators like cats, always place feeding devices off the ground and away from bushes.

Crows & Magpies

Rooks are characterized by the grey-white skin in front of the eyes.

Basic facts

Considered to be among the world's most intelligent animals, crows have a long-shared history with humans and feature prominently in the mythology of many ancient people. Many crow species are considered to be synanthropic, an expression denoting species of wild animals and plants of various kinds that live near, and benefit from, an association with humans and the somewhat artificial habitats that humans create around them.

Flocks of crows can create a lot of noise, leave messy droppings, strew garbage around, and cause damage to buildings and landscaping. Crows are also major agricultural pests that damage crops, particularly corn, sunflowers, and various fruits. In some instances, they prey on livestock in flocks, such as newborn lambs or goats.

As protective parents, crows and magpies may attack intruders they fear are approaching too close to their nests. This is more likely to happen in the spring months. To avoid being dive-bombed, stay away from the nesting area and keep children and pets from getting too close until the birds have flown away.

Carrion crow and hooded crow

The carrion crow (*Corvus corone*, Ger.: Rabenkrähe) and the hooded crow (*Corvus cornix*, Ger.: Nebelkrähe) are two very closely related species. The all-black carrion crow can be distinguished from the black and grey hooded crow by the color of their feathers and their geographic distribution. This distribution is homogenic and follows a separation line along the Elbe river, through Czechia and south of the Alps, which makes the carrion crow the only crow species in Bavaria. The carrion crow is about 45-53 cm (18-21 in) in length with a wingspan of 0.5-0.6 m (210-250 in), and weighs 390-600 g (14-21 oz).

Carrion crows can become tame near humans and can often be found in areas or habitats with human activity. Common carrion habitats include cities, moors, woodland, sea cliffs, and farmland. They will compete with other social birds such as gulls and ducks for food in parks and gardens. They are one of the most adaptable birds and are often quite fearless, although they can be wary of humans. Carrion crows are fairly solitary, usually found alone or in pairs, although they may form occasional flocks, e.g., for winter roosting with other corvids.

Rook

Similar in size and appearance to the carrion crow, the rook (*Corvus frugilegus*, Ger.: Saatkrähe) is distinguished by the bare grey-white skin around the base of the adult's bill in front of the eyes. Furthermore, rooks are very sociable birds and are unlikely to be seen on their own.

The species is gregarious and their colonial nesting behavior gave rise to the term rookery. As these birds have harsh and loud calls, rookeries are often perceived as nuisances.

Distinctive in appearance, the magpie cannot be confused with any other bird in Germany.

Common magpie

Part of the crow family, the black and white common or Eurasian magpie (*Pica pica*, Ger.: Elster) is also considered to be very intelligent. As a resident breeding bird it is common throughout the northern part of the Eurasian continent.

With its noisy chattering, a length of 44-46 cm (17-18 in), of which more than half is their tail, and its distinctive coloration, the magpie cannot be confused with any other species in the region. When seen close-up its black plumage takes on an altogether more colorful hue with a purplish-blue iridescent sheen to the wing feathers and a green gloss to the tail.

The preferred habitat of magpies is open countryside with scattered trees. Therefore, they are normally absent from treeless areas and dense forests. Sometimes they breed at high densities in suburban settings such as parks and gardens.

Magpies have been attacked for their role as predators, which includes preying upon other birds' eggs and their young. However, scientific studies do not suggest that they affect total songbird populations.

Measures for control

- If you want the birds to permanently leave your property you will need to remove **the source of food or shelter** that they are using.

- Most likely the birds are in your yard because they are able to find food there. **Keep garbage in a secure container with a lid**, ensure your **compost is covered**, **feed your pets indoors,** and **store the pet food inside**.

- You may **trim** trees until the cover they provide is too thin for the crow or magpie to roost in comfortably. Note: This may **negatively impact** other birds, mammals, or insects.

- "**Frightening devices":** such as scarecrows, eye-balloons, and hawk kites, can deter for a short time. To make them more effective, they **will need to be moved frequently**.

- To **protect songbirds** from nest-raids by crows and magpies, **provide nesting boxes** with an opening smaller than 15 cm (6 in) in diameter and place the opening so that there is at least 15 cm (6 in) from the opening to the bottom of the box.

Coal tit, a common song bird, often uses nesting boxes.

Snakes & Blindworms

Blindworms are often found in gardens where they are appreciated by gardeners since they eat slugs and snails.

Blindworm

The blindworm (*Anguis fragilis*, Ger.: Blindschleiche), or slow worm, is not a snake, but a legless lizard native to Eurasia. The "blind" in blindworm refers to the lizard's small eyes. It is found in many environments, including farmland, grasslands, forests, parks, and urban areas. This burrowing reptile spends much of its time under rocks, tree branches, and other objects lying on the ground, or in shallow holes in soft dry soil. It is often found in mature gardens and allotments, where it prefers to hunt near the compost heap. However, if you have a cat, you are unlikely to find a blindworm in your garden as cats will hunt them.

They are brown to copper-colored, and usually have a dark stripe in the middle of their back and along the sides of their body. They are much smoother and shinier than snakes, since their scales do not overlap one another. The blindoworm's ability to shed its tail to escape predators and blink with its eyelids make it easily identifiable from snakes. While the tail regrows, it does not reach its original length. Adults grow to be around 40 cm (16 in) long and can live up to 30 years in the wild. **Blindworms are not able to bite humans and are completely harmless.**

Basic facts

In Germany, snakes and lizards are protected by law (Article 44 Federal Nature Conservation Law). **It is forbidden to catch or kill them without Host Nation Nature Protection Agency approval and a proper permit.**

Three species of snakes and one legless lizard, that can be confused with a snake, occur in the Grafenwoehr Training Area. While the danger posed by snakes in Germany is not comparable to other regions of the world - the last known fatality by a snakebite in Bavaria occurred over 50 years ago - snakes should nonetheless be approached with caution. Snakes that have venom use it primarily to kill and subdue prey rather than for self-defense. Albeit rarely, snake bites do occur, e.g., by accidentally stepping on a snake.

Bites of venomous species can be life threatening and bites of non-venomous species are painful. Regardless of whether the bite is from a venomous or non-venomous snake, it is necessary to **seek medical treatment** to prevent infection of the puncture wound. In the unlikely event of a snake bite, on your way to the doctor you should:

- **Stay calm** and don't panic.
- Try to **remember the shape, size, and color of the snake**.
- Keep the bitten part of your body **as still as possible**.
- **Remove jewelry, watches, and shoes** from the bitten limb in case of swelling.
- **Cover the wound** with a loose, sterile bandage.
- **Mark the progression of any swelling** or redness.

European adders are venomous but rarely encountered.

European adder (*venomous*)

In search of dry land for sun-basking, the European adder (*Vipera berus*, Ger.: Kreuzotter) can be found in a variety of locations, including rocky hillsides, hedgerows, meadows, and at the edges of woods. There must also be a thick cover into which the snakes can disappear when they feel threatened. Their preference for undisturbed habitats means that they are rarely encountered in urban areas. Additionally, they try to avoid human contact as much as possible.

European adders typically have a distinct, dark zig-zag pattern extending the length of their bodies, with a black "V" or "X" shape on the back of the head. Throughout their range, melanistic (black) adders are not uncommon and they may even be more successful than the normal color form, as their darkened skin cells have a thermoregulatory advantage. Adults grow to an average length of 60-90 cm (24-35 in).

European adders tend to feed on a variety of animals such as lizards, birds, small mammals such as voles, and sometimes even smaller snakes. They are not typically aggressive and only bite when alarmed or threatened. **If bitten by a European adder, seek medical treatment immediately.**

European grass snake

The European grass snake (*Natrix natrix*, Ger.: Ringelnatter), also known as the ringed or water snake, is typically dark green or brown in color, with a characteristic yellow band behind the head. When fully grown, the females are 90-110 cm (35-43 in) and the males are 40-60 cm (16-24 in) long. The European grass snake's primary defenses are to produce a garlic-smelling fluid or to feign death, but if threatened, they can still bite.

Often confused with the European adder, the European grass snake is a **non-venomous** and harmless creature. It favors rough land and pastures, usually close to a standing body of water.

Feeding almost exclusively on amphibians, some individuals may also take small fish. The species is an occasional garden visitor.

Smooth snake

The smooth snake (*Coronella austriaca*, Ger.: Schlingnatter) prefers dry areas, such as rock outcrops or mowed grassland. Its coloration ranges from brown to gray to rusty-red, and it is distinguished by two rows of small, dark spots running down the length of the body. It also has a distinct black cap on its head. The smooth snake's name comes from the fact that its scales are flat and smooth, unlike those of the European grass snake and adder, which have a ridge down the middle.

Smooth snakes are smaller and more slender than other snakes, the average length of males and females is about 60-75 cm (24-30 in). These snakes may perform an aggressive defense display and may bite if threatened. However, they are extremely rare and **non-venomous**.

Frogs & Toads

Common frogs can be distinguished from common toads by their smoother, less warty skin.

Common frog

Common frogs (*Rana temporaria*, Ger.: Grasfrosch) breed in shallow water bodies such as ponds, puddles, lakes, and ditches during spring and spend much of the rest of the year feeding in woodlands, gardens, hedgerows, and tussocky grasslands.

Their powerful hind legs make them excellent swimmers. Common frogs tend to be most active at night when they feed on a wide variety of invertebrates such as insects, snails, slugs, and worms.

Adult males grow up to 9 cm (3.5 in) in length and females up to 13 cm (5 in) in length. Their usual coloration ranges from olive-green to brown, although they exhibit great variety and can be yellow, pink, red, lime-green, cream, or black.

The common frog differs from the common toad by its smoother skin compared to the toad's more warty skin and longer hind legs. Furthermore, the common frog can be characterized by dark patches on the back, stripes on the hind legs, and a dark 'mask' behind the eye.

Basic facts

In Bavaria, 19 native amphibians can be found, 13 of those belonging to the order Anura (frogs and toads). In contrast to the United States, the danger posed to humans by poisonous frogs or toads in Germany is negligible.

In Germany, 50 percent of amphibians are considered endangered due to habitat destruction caused by human development. This includes the progressive land consumption by residential and industrial areas as well as the fragmentation of the landscape by settlements and roads. Furthermore, spawning waters have been destroyed and many hectares of valuable floodplain areas or moist meadows have been drained.

⚠ **The skin of one toad contains enough toxin to cause serious symptoms** or even death in animals and humans. Clinical effects include severe irritation and pain to eyes, mouth, nose and throat, cardiovascular and respiratory symptoms, paralysis and seizures, increased salivation, vomiting, hyperkalemia, cyanosis, and hallucinations.

As the poison must be ingested or come into contact with a mucous membrane to be harmful, exposure can easily be avoided by simply **not touching the animals**. Pets that catch and try to eat toads are at risk and should be checked by a veterinarian immediately.

Humans that come in contact with toad secretion should wash their hands and exposed body parts thoroughly.

If any adverse symptoms appear contact the Health Clinic immediately.

Common toad

The common or European toad (*Bufo bufo*, Ger.: Erdkröte) is an amphibian found throughout most of Europe and the most common toad in Bavaria. With a broad head, the common toad can reach about 15 cm (6 in) in length. It is generally brown or olive-brown in color, but colors may vary. Females are often reddish or have reddish warts. The skin is warty and often appears dry.

Although toads are usually solitary animals, during the breeding season, large numbers of toads converge on certain breeding ponds, where the males compete to mate with the females. Common toads have a strong migratory instinct and will follow the same route back to their breeding ponds each spring. During the migration to these breeding grounds, many toads are killed by traffic.

As a defense mechanism, **European toads produce bufotoxin, a poisonous substance, from glands near their eyes and in their skin.** Many would-be predators learn to avoid eating toads. Toxins are also present in the skin of the tadpoles.

Common toads can be frequently seen during migration season.

Amphibian migration

Amphibians live between water and land. During the first developmental period, shallow waters and lakes are important habitats. As adults, amphibians prefer wet meadows or forests. Amphibians migrate from their winter quarters to their reproduction sites, then to their summer habitats and eventually back to their winter quarters.

In spring, the migration is the greatest and begins when temperatures rise above 5° C (41° F). Thousands of amphibians migrate from their land quarters to shallow waters in order to spawn (lay eggs). Therefore, they choose the shortest, most direct way by smelling the direction of or location of water. This may cause problems when their adult habitat, such as a wet forest, is isolated by roads. **Every year, thousands of amphibians are run over by cars.** At the local level, these traffic strikes could result in an extreme reduction of the amphibian population or even their extinction.

During the migration period, environmental agencies and volunteers collect amphibians from the street and put barriers in place so the animals do not walk on the roads. Another technical option is to create tunnels under the road that allow amphibians safe crossing. Streets are not only problematic for amphibians getting run over, but also because of obstacles such as drainage systems that present potentially deadly traps.

Within USAG Bavaria, amphibian migration occurs regularly on roads next to bodies of water. Please be aware that during amphibian migration periods additional speed limits may be imposed.

Introduced Aquatic Animals

Signal crayfish have been introduced worldwide.

Signal crayfish

Native to western North America, the signal crayfish (*Pacifastacus leniusculus*, Ger.: Signalkrebs) is the most widespread non-native crayfish in Europe due to its high adaptability to a wide range of environments.

Identification features of signal crayfish include lobster-like appearance, greenish-brown upper surface, bright orange to red lower surface, and large smooth claws with red undersides and a white to pale blue-green patch near the claw hinge. They have a life expectancy of up to 20 years. Male individuals can reach a length of 16 cm (6.3 in), while females can only reach a maximum size of 12 cm (4.7 in). Around 200-400 eggs are laid in autumn and carried under the female's tail until hatching the following spring.

They can be found in a variety of habitats, from small streams to large rivers and natural lakes. The ability to tolerate water temperatures of up to 33° C (91.4° F) allows them to prosper in a variety of environments.

Introduced to Europe in the 1960s, the signal crayfish often replaces native crayfish species due to higher fertility rates and less vulnerability to reproductive interference. Signal crayfish also prey on native species.

Basic facts

Introduced aquatic animals are an increasing threat to our waterways. Promoted by increasing mobility, global shipping routes, and international goods traffic, aquatic animals are frequently introduced to new distribution areas.

The lack of predators or competitors in these new distribution areas allows them to rapidly increase their population and potentially become invasive with various negative effects.

Introduced animals may pose a risk to native species either by outcompeting them or introducing new diseases. For example, the invasive signal crayfish has enabled an infectious water mold, known as the **crayfish plague**, to spread. While the signal crayfish itself is resistant to the fungus, it decimates native crayfish populations (e.g., the European crayfish *Astacus astacus,* Ger.: Europäischer Flusskrebs).

Economic costs caused by invasive species can include direct costs, like production loss in fisheries, or indirect costs, like the cost to manage the species. Depending on the species these costs can add up to several million dollars.

Other than the relocation of animals by international goods traffic (e.g., the unintentional transport of animals via the ballast water of ships), the intentional introduction of animals - not only in aquatic but also in terrestrial habitats - can have a detrimental effect on local ecosystems. For this reason, you should **never release animals into the wild**.

Rainbow trout can outcompete native species.

Rainbow trout

The rainbow trout (*Oncorhynchus mykiss*, Ger.: Regenbogenforelle) is native to North America. A favorite of anglers, they have been introduced to waterways worldwide for food and sport. They are one of the most widely introduced fish species in the world.

Freshwater stream rainbow trout average between 0.5 and 2.5 kg (1 and 5 lb). A broad red stripe from the tail to the gills makes them easily distinguishable from other trout species.

Native species, like the European river trout (*Salmo trutta faria*, Ger.: Bachforelle*)*, can be forced to migrate from their natural habitats because the rainbow trout can outcompete them for food and habitat.

The possible transmission of diseases and parasites through the rainbow trout, as well as their ability to hybridize with other less abundant trout species, make them a threat to local fish populations.

Brown bullhead

The brown bullhead (*Ameiurus nebulosus*, Ger.: Zwergwels) is approximately 50 cm (21 in.) long. The fish, scale less, has a brown-green back with dark speckles and an off-white belly. Barbels around the mouth and pelvic spine are a distinctive characteristic. Juvenile brown bullheads are similar in appearance, but are more likely to be of a single solid color.

The brown bullhead is native to North America and can be found anywhere from the Great Lakes to the Hudson Bay and within the Mississippi River basins. The first notable invasion in Germany occurred in the early 1900s. The brown bullhead is an excellent example of how invasive species spread throughout the Grafenwoehr Training Area. They were originally kept as aquarium fish and were released into the local waterways such as Schaumbach creek.

Brown bullheads pose a threat to native aquatic wildlife because they compete for food and habitat. They are eager predators who eat the spawn of other fish species, thus affecting reproduction of native fish.

Brown bullhead with typical barbels kept in an aquarium.

Wasps, Hornets, & Bees

Wasps

The European yellowjacket (*Vespula germanica*, Ger.: Deutsche Wespe) is a eusocial (having a high level of social organization) species, living together in a nest with an egg-laying queen and non-reproducing workers. In spring, the queen will select a nest site and build a small paper nest. This nest is expanded throughout the summer and can house approximately 5,000 workers with 10,000-15,000 brood cells by late September. In autumn, all wasps, except for the queen, die and the nest is abandoned.

However, the majority of wasp species are solitary, with each adult female living and breeding independently. There are over 100 species of indigenous wasps in Germany.

Wasps play many ecological roles. Some wasps are predators who focus on feeding themselves while others are pollinators that work to provision their nests. Others, notably the cuckoo wasps, are kleptoparasites, laying eggs in the nests of other wasps. Some solitary wasps lay eggs on or in other insects to provision their own brood. Many pest insects are preyed upon by these parasitoid wasps, making them valuable as a biological pest control.

Wasps are similar in size to bees (9-14 mm; 0.03-0.05 in) but are more agile fliers. They have a narrow, smooth body with a pronounced middle indentation called a wasp waist. In Germany, they are most commonly black and yellow. In summer, wasp colonies reach their maximum size and workers forage extensively to feed the larvae. Thus, they are more likely to come into contact with humans as they often scavenge for human food, specifically from garbage cans.

Hornets

Hornets belong to the family of wasps (Vespidae). The only indigenous species in Germany is the **strictly protected** European hornet (*Vespa crabro*, Ger.: Hornisse). This species is similar in appearance to yellowjackets but is much larger (20-35 mm; 0.07-0.13 in) with a smooth, long body. Hornets hunt and eat other insects but also feed on nectar and sugar-rich plant foods such as overripe fruit. Hornets are often considered dangerous and aggressive. In truth, European hornets are less aggressive than other wasps and their sting isn't more dangerous than any other wasp sting. However, workers will vigorously defend the nest if provoked.

The European hornet is the largest eusocial wasp native to Europe.

Wasps, hornets, and bees typically only sting when they feel threatened, e.g., by quick movements or when their nests are damaged. Normal sting symptoms **include pain, swelling, redness, and itchiness.** However, in some cases they **can cause allergic reactions that require immediate medical attention.** A person should seek medical attention if he or she is stung a number of times, or has difficulty breathing, or experiences dizziness and nausea.

A bumble bee collecting nectar from a summer lilac bush.

Bees

Bees are flying insects closely related to wasps and ants, known for their role in pollination and for producing honey and beeswax. There are over 16,000 species of bees and they can be found in every habitat that contains insect-pollinated flowering plants on every continent except for Antartica.

Bees range in size from tiny stingless species whose workers are less than 2 mm (0.007 in) long, to the leafcutter bee whose females can attain a length of 39 mm (0.15 in). While some species - including honey bees, bumblebees, and stingless bees - live socially in colonies, most bees are solitary and do not form colonies at all, such as the cuckoo bee.

Bees feed on nectar and pollen, the former primarily as an energy source and the latter primarily for protein and other nutrients.

Wild bees are considered to be some of the best pollinators and are extremely important for the conservation of wild and cultivated plants. One bee can pollinate up to 5,000 flowers per day.

Precautions

The following precautions apply for all three types of insects to help prevent conflicts:

- Avoid quick or sudden movement in their presence.
- **Don't attack the bees, wasps, or hornets. Don't destroy their nest.** If necessary, contact the Environmental Division or the Fire Department for help with nest removal.
- Perspiration and perfumes can attract bees or wasps. Try to manage both if you plan to spend extended periods of time outdoors.
- **Keep trash cans and dumpsters closed and clean.** Keep trash bags closed.
- **Be careful when eating outdoors.** Cover food and drinks.
- In case of a sting, keep the wound cool and remove the stinger (if stung by a bee). **Wasps and hornets can sting multiple times.**
- Possible allergic reactions include breathlessness, sweating, skin rash, circulation problems, and/or vertigo.
- **Allergic persons** should follow the advice of their doctor and/or seek **medical help**.

Honeybees store pollen and honey in honeycombs.

Bugs

The firebug often forms aggregations of up to a hundred individuals.

Firebug

The firebug (*Pyrrhocoris apterus*, Ger.: Gemeine Feuerwanze) is a common and easily recognizable bug due to its striking red and black coloration.

Its young nymphs are often observed in aggregates of ten to one hundred individuals. These aggregations can often be found on the base of lime trees (Ger.: Linde), but also mallows (Ger.: Malve), black locust (Ger.: Gewöhnliche Robinie), and hibiscus(Ger.: Hibiskus). The formation of large groups, in combination with the striking warning coloration, seems to be a deterrent for predators, especially birds, as they produce a nasty smelling substance.

Contrary to its Latin name, which suggests it is a “wingless fire bug,” the species does have wings although it is unable to fly.

Basic facts

The Hemiptera (Ger.: Schnabelkerfen), sometimes called "true bugs" or more colloquially “bugs,” are an order of insects comprising some 50,000 to 80,000 species of groups such as the cicadas, greenflies, planthoppers, leafhoppers, and shield bugs.

There is large variety among the different bug species, but all of them have piercing mouthparts with which they can suck the juices from plants or animals. Bugs often have long antennae divided into a small number of segments, and the front wings can be somewhat hardened. Some bugs resemble beetles, but unlike bugs, beetles have wing covers that do not overlap. Some species are agricultural pests that damage crops by directly sucking sap and others harm crops indirectly by transmitting serious viral plant-diseases. Others are haematophagic (blood sucking) parasites, such as bedbugs. Certain species have been used for biological control of pest insects.

Hemipterans develop by incomplete metamorphosis and young (or nymphs) generally resemble small, wingless adults in general structure although their color and markings may be very different. Depending on the species, nymphs will molt 6 to 8 times before they attain maturity.

Two common species in Germany that are often the cause for alarm, as they are brightly colored and tend to appear en masse, are the green shield bug and the firebug.

Harmless bugs

No health risks are associated with green shield bugs or firebugs. Mass appearances of the species are no cause for alarm.

Green shield bug

The green shield bug (*Palomena prasina*, Ger.: Grüne Schildwanze), also commonly called stink bug, is a very common shield bug throughout Europe and is found in a large variety of habitats, including gardens. It can often reproduce in large numbers in years with an unusually long, warm summer season, allowing for a second reproductive cycle to occur. The second generation of these bugs will then be looking for a good spot to hibernate for the winter, preferably a dry, temperate space. Spaces in houses are attractive for this reason. However, they do not cause harm to humans, pets, house plants, or building structures.

The green shield bug emerges in May to mate in June, then the female will lay several clutches of 20-30 eggs. The mating adults will change from green to brown as they age at the end of the summer.

When the eggs hatch, sibling bugs will remain grouped together as they go through five molting stages. During each nymphal stage, they molt and the bugs will change colors from black to greenish black and then finally green as an adult. When in hibernation they can appear brown and then change to green again before emerging in the spring.

To prevent green shield bugs from wintering in your home, simply keep your doors and windows closed during mass occurrences of the insects.

Further control measures are not required. If you find a bug, avoid killing it as it produces a pungent odor from special glands if handled or disturbed.

Green shield bugs often appear in or close to houses.

Western conifer seed bug

The Western conifer seed bug (*Leptoglossus occidentalis*, Ger.: Amerikanische Kiefernwanze) is native to North America. A newcomer to Europe, it was accidentally introduced in northern Italy with timber imports and has now invaded much of the continent.

The bug feeds on the sap of pines but causes no noticeable damage to garden trees. Therefore, control measures in the home garden are not necessary. Encountering them is quite probable since they have a tendency to seek shelter in buildings as the weather turns cooler in fall.

Western conifer seed bugs were introduced to Europe and now are frequent visitors of houses, especially in fall.

Ants

Average black garden ant colonies contain 4,000 - 7,000 individuals, but in rare cases colonies can be as large as 40,000 workers.

Black garden ant

The black garden ant (*Lasius niger*, Ger.: Schwarze Wegameise), also known as the common black ant, is found all over Europe and in some parts of North America, South America, Australia, Asia, and Australasia.

Black garden ants will farm aphids (greenfly or blackfly) for the honeydew, a sugar-rich sticky liquid, they excrete, bringing them from host plant to host plant and spreading these garden pests to new, healthy plants. The ants will also eat ripe fruits, especially fruits like strawberries that lack a thick protective skin.

Black garden ants explore their surroundings extensively during early summer in an effort to increase the food supply, and to test new ground in preparation for the nests' summer flight. The black garden ant is the only species of ant in the region to commonly enter homes. These explorations can lead to burrowing through mortar and brick.

Ants do not normally pose a health risk but are a nuisance and can physically contaminate foodstuffs.

Basic facts

Ants are small black or dark brown insects that nest in soil, lawns, at the base of walls, or under flat stones. Ants are social insects, they live in colonies that consist mainly of workers - sterile, wingless females. The colonies are headed by a queen or queens, whose function in life is to lay thousands of eggs that will ensure the survival of the colony. Ant societies have division of labor, communication between individuals, and an ability to solve complex problems. They communicate and cooperate by using chemicals that can alert others to danger or lead them to a promising food source. The colonies are described as superorganisms because the ants appear to operate as a unified entity.

In July and August, winged males and females emerge for mating flights. Climatic conditions determine when these flying ants appear, and all the nests in one area will generally erupt at the same time.

Pest control

- Nests of the black garden ant **can be relocated** by putting a flowerpot filled with woodchips on one of their paths. Soon the ants will move their nest into the flowerpot, making it easy to relocate the whole colony.
- **Physical barriers** and properly sealed gaps in buildings can stop the ants from home invasions.
- Ants don't like the smell of **lavender, chalk, or agricultural lime**.
- If all else fails, **ant toxicant**, which is available at German hardware stores and at Self Help, can be used. For massive infestations call DPW Call Center.

Pharaoh ant

The pharaoh ant (*Monomorium pharaonis*, Ger.: Pharaoameise) is one of the smallest ant species and belongs to the subfamily of the node ants (Myrmicinae). It is originally from Asia and was introduced to Europe in the 19th century. It lives primarily in buildings with consistent high temperature and is considered a disease carrier and a major pest in Europe, Australia, and the United States.

The workers are yellow or light brown and are approximately 1.5-2 mm (0.05-0.08 in) long with a non-functional stinger used to generate pheromones. Males are about 3 mm (0.11 in) long, black, and winged but do not fly. Queens are dark red and 3.6-5 mm (0.14-0.2 in) long. Undisturbed populations can consist of more than 300,000 individuals.

The pharaoh ant can only survive in warm places such as heated rooms and cannot survive winter outdoors. Therefore, it lives primarily in buildings with high temperatures such as hospitals or private households. Unlike the native ants in Central Europe, the pharaoh ant is active all year round and breeds continuously throughout the year. The ant can feed on a wide variety of foods including grease, sugary foods, and dead insects. It can gnaw holes in silk, rayon, and rubber goods.

Pharaoh ants can become a problem for hospital hygiene. Although unlikely, because of their small size and their preference for cracks and gaps, they can penetrate medical equipment such as needles, catheters, etc., and thereby contaminate them. They are also attracted by blood and pus and may crawl under wound dressings.

Anthills of the red wood ant are often found near rotting tree stumps.

Red wood ant

The red wood ant (*Formica rufa*, Ger.: Rote Waldameise) is native to Europe and Anatolia. Workers are red and brownish-black, measuring 5-9 mm (0.2-0.35 in) in length. They have large mandibles, which they use to deliver an often painful bite and they are also able to spray formic acid from their abdomens as a defense.

The species lives in both coniferous and broad-leaf woodland and parkland. Nests of these ants are large, conspicuous, dome-shaped mounds of grass, twigs, or conifer needles, often built against a rotting stump, usually situated in woodland clearings where the sun's rays can reach them. Large colonies may have 100,000 to 400,000 workers. Red wood ants play an important part in the forest ecosystem and are commonly used in forestry as a form of pest management.

Red wood ants are a specially protected species according to Article 42 of the German Federal Nature Conservation Law.

It is strictly forbidden to handle, kill, destroy, or disturb ants or their nests. Disturbing or destroying ant nests may entail steep fines.

Green Lacewings

Common green lacewings often hibernate in houses.

Common green lacewing

The common green lacewing (*Chrysoperla carnea*, Ger.: Gemeine Florfliege) is about 10 mm (0.04 in) long. It is pale lime green during the summer with a lemon-yellow stripe down the middle of the body. The head lacks the black spots of some species, but the cheeks are reddish in color.

The most distinctive feature of the common green lacewing is that it overwinters as an adult insect: it enters buildings to hibernate and turns yellowish-brown, often with red spots on the abdomen. They can be found in cooler dwellings, where they like to stay in shutter-boxes, or behind curtains or pictures. They can also be found in attics, sheds, or garages.

Since the animals are very useful, one should accept them in winter, even in the home. Opening windows and roof hatches in spring makes it easier for the common green lacewings to go back outside.

Common green lacewings are propagated in masses by beneficial insect breeders and can be used specifically in greenhouses, winter gardens, or offices for pest control.

Basic facts

Green lacewings are insects whose benefits are often underappreciated. Just like ladybugs, they are important predators of many types of soft-bodied insects and insect eggs, and they naturally contribute to insect pest control.

There are about 35 species of green lacewings in Central Europe, few of brownish color but all others are various shades of green. All have long antennae and two pairs of transparent wings that are held tent-like over their body when at rest. The wings are iridescent when they catch the light and are crossed with fine veins, giving the wings their lace-like appearance.

An unusual characteristic is their eyes, which look like two golden spheres. They are weak fliers and are commonly found near aphid colonies. They mostly feed on nectar, pollen, and honeydew, but some species also feed on insects.

Fun facts

Lacewings show some interesting and unusual adaptations to their environment:

- A **reaction to ultrasound** was observed in adult green lacewings. As soon as green lacewings perceive ultrasonic signals, they attach their wings to the body and drop on the ground. This allows them to **escape bats** that locate their prey by ultrasound at night.
- Green lacewings **communicate** with each other by **vibrating with their abdomen**. In doing so the abdomen touches the surface on which the lacewing is sitting, usually a leaf.

Larva of green lacewing.

Life cycle

The eggs are laid in late spring and early summer by adults that have over-wintered from the previous autumn. They are white, cigar-shaped, and are attached to leaves by a long filament at one end. This hair-like stalk is about 1.3 cm (0.5 in) long and helps to reduce cannibalism of the eggs by sibling larvae. Females will usually deposit the eggs close to a food source for the larvae.

The tiny larvae, which are also known as “aphid lions”, are predatory and they actively hunt aphids, scale-insects, caterpillars, and insect eggs on foliage. They are brown and white in color and may grow up to about 1.3 cm (0.5 in) in length. They are voracious feeders, attacking with large, curved, hollow mandibles.

The larvae will pupate on the plants on which they were searching for insect prey. The pupa is light in color and egg shaped. The adults arising from this generation are in flight by mid-summer and immediately lay eggs so that a second life-cycle is completed before autumn, and the emerging adults then prepare for hibernation.

Promotion of lacewings

To **promote green lacewings** in your garden, there are specific insect hotels adapted to their needs. The internet offers instructions on how to build such an insect hotel on your own.

Insect hotel for green lacewings.

You can also indirectly help green lacewings by **promoting the plants they prefer to hunt on**, such as dog rose, common poppy, members of the carrot family (such as dill, thistle, fennel, wild carrot, parsnip, parsley), and members of the aster family such as chamomile, ox-eye daisy, pot marigold, and common chicory. Hawthorn and hedges serve a refuge during the day.

Members of the aster family, such as the ox-eye daisy, are preferred plants of green lacewings.

Moths

Caterpillar aggregations

Tree covered in silk web by spindle ermine moth.

Despite the damage spindle ermine moths and horse chestnut leaf miners cause to trees, **they do not pose a health risk to pets or humans**.

If a mass of caterpillars is spotted, and identity cannot be determined, please do not attempt to destroy them. Doing so may cause a person and the caterpillar unnecessary harm. Instead, you may **submit photographs with location descriptions to the Environmental Division's Facebook page to be reviewed.**

Unlike the webbings of the oak processionary moth, the spindle ermine moth caterpillars do not pose a risk to the public. These species are easy to distinguish from one another.

Spindle ermine moth

The larvae of the spindle ermine moth (*Yponomeuta cagnagella*, Ger.: Pfaffenhütchen-Gespinstmotte) appear as clusters of yellow and black spotted caterpillars in web covered shrubs. Known as euonymus webworm, and considered a serious pest to spindle trees in the United States, the species is native to Europe and only occasionally harmful to the plant they claim as home during their larval and pupal stages.

The habitat and food source of the spindle ermine moth is the European spindle shrub, found along forest edges and hedges. Locally, this plant can be found in the vegetation lining the sidewalk of the Tower Barracks post office and along the Physical Fitness Center track. The plants can be seen covered in the caterpillars' webs and mostly defoliated, as they eat the leaves and bark in preparation of spinning cocoons.

The life cycle of the spindle ermine moth begins in the summer, when a female moth lays eggs on the branches of the European spindle shrub. After a few weeks, the larvae hatch, eat briefly, and then hibernate. In spring, the plant will begin to grow leaves, bringing out the caterpillars and their webbing.

During their larval and pupal stages, the spindle ermine moth uses webs as a protective barrier. As larvae, they eat the leaves. Then as pupation to moth begins, they spin silk cocoons to hang inside the webs.

Emergence occurs in June, when elongated white and black spotted moths emerge to mate and lay eggs. The moth's lifespan is short, usually perishing by October.

Horse chestnut leaf miner

The horse chestnut leaf miner (*Cameraria ohridella*, Ger.: Rosskastanienminiermotte) is a small moth with caterpillars that feed inside horse chestnut leaves causing brown and white blotches to develop between the leaf veins.

The moth has a forewing length of just 3-5 mm (0.1-0.2 in) and is reddish-brown with white and black bands. It primarily lays eggs on the foliage of horse chestnuts. After hatching, the caterpillars enter the leaves and eat the internal tissues. There are usually three generations hatched during the summer and by August the foliage may be extensively damaged, leading to early leaf fall. The moths hibernate as pupae in the leaves.

The horse chestnut leaf miner was first reported in Macedonia in the 1980s, but since then has spread rapidly through central and eastern Europe. Although the moths are able to fly, they only actively fly short distances. The light physique and the fringed hindwings allow passive flying and spreading by wind. Additionally, the moth is spread by humans via travel and transport routes. Its rapid increase in central Europe may be explained by the fact that potential predators have not yet adapted to the new food source.

Horse chestnut leaves damaged by horse chestnut leaf miner.

Indicators & control

Usually, it is easy to spot trees affected by the leaf-mining moth, especially as the season progresses:

- Horse chestnuts produce normal foliage and flowers in the spring and the **first signs of leaf-mining usually appear during June** as elongated blotches on the foliage, at first white but later turning brown.
- When held to the light, caterpillars, or **circular pupal cocoons**, can be seen within the mined areas of the leaf.
- By August, most of the leaf area may be occupied by leaf mines, giving the impression that the tree is dying, although it will survive.
- **Heavily infested trees will drop their leaves early**. This has almost no effect on the growth rate or health of trees.

Horse chestnut trees appear to tolerate the moth and so **pesticide use is not necessary**. Nevertheless, these non-pesticide measures could be helpful:

- **Collecting and disposing of fallen leaves** in autumn may reduce the overwintering pupae.
- A **pheromone trap** that attracts male moths is available from several suppliers. In areas where the moth is uncommon, this may reduce the mating success of the moth.

While these measures can delay the build-up of damage during summer, they are **only worthwhile for isolated trees**, where most of the fallen leaves can be gathered.

Oak Processionary Moth

A protein in the **caterpillars' tiny hairs** can cause **skin and eye irritations or allergic reactions** that are often accompanied by a **severe rash, dizziness, fever, sore throats,** and even **breathing difficulties** in people and animals who come into contact with them.

Oak processionary caterpillars.

The very fine hairs can be easily broken and spread further by the wind, typically by May/ June. As the thin hair can stick to the underbrush, it is not necessary to have direct contact with the caterpillar to be affected.

The toxins persist in the hair of the shed skin and can still be harmful for months or even years. Even contact with dead caterpillars and old nests can be dangerous for humans.

For this reason, you should **never approach or touch either the nests or the caterpillars.**

Note that adult moths are harmless.

Not all webbed nest or hairy caterpillars are oak processionary moths, please do not attempt to destroy them. Doing so may cause a person and the caterpillar unnecessary harm. Instead, you may **submit photographs with location descriptions to the Environmental Division's Facebook page to be reviewed.**

Basic facts

The larvae, or caterpillars, of the oak processionary moth (*Thaumetopoea processionea*, Ger.: Eichenprozessionsspinner) can affect the health of oak trees, people, and animals. The species is a native of Germany and is distributed all over central and southern Europe. It is also occasionally found as far north as Sweden. Their range is expanding northward, possibly as a result of global warming. The caterpillars feed on oak leaves; large populations can strip trees bare, leaving them weakened and vulnerable to other threats. Typically, oak trees at the edge of a forest are most susceptible, but also single oak trees in urban settings, housing areas, parks, and playgrounds can be infected.

Caterpillars typically follow one another head-to-tail in long "processions" to and from the nest and from one feeding position to another, giving them their common name. In early summer they build distinctive white, silken webbed nests on the trunks and branches of oak trees (almost never among the leaves), and leave white, silken trails on the trunks and branches. The nests may be hemispherical, teardrop-shaped, blanket-like, or bag-like, and at any height on the tree.

The caterpillars rest in these nests during the day between feeding periods, and later in the summer they retreat into the nests to pupate into adult moths. The adult moths emerge from pupation and are active from mid- to late summer and lay their eggs on small twigs and branches in oak trees. They are indistinctive brown moths very similar in appearance to other harmless species. They prefer oak leaves but they also eat the leaves from hazel, hornbeam, sweet chestnut, birch, and beech trees.

Specialist abatement of oak processionary caterpillar by flame treatment.

Abatement

'Spot it, avoid it, report it' summarizes the behavior everyone should adopt in affected areas. In practice, this means that everyone should know how to recognize oak processionary moth caterpillars and nests, how to protect themselves from the health hazards, and how to report a finding.

Abatement measures must be considered for health reasons where contact with the toxic hair cannot be avoided. Pest control can only be accomplished by specialists with appropriate protective clothing and equipment.

Typical nest of the oak processionary caterpillar.

Precautions

- **Keep away** from oak trees that are infected by caterpillars. Oaks in parks or free standing oaks are more often infected.
- Indicators are white-grey webbed nests and large groups of caterpillars at the trunk of the tree.
- **Don't touch** caterpillars or nests.
- **Teach children not to touch** or approach the nests or caterpillars.
- **Train or restrain pets** from touching or approaching them.
- In case of contact with the caterpillars' hair, **promptly take a shower and wash clothing**.
- **Keep windows closed** if you live near infected oak trees.
- **Seek medical attention** in the event of severe exposure or allergic reactions.
- Wear **long-sleeved clothing** in wooded areas.

The most dangerous months are May and June. Please report oak processionary moth caterpillars and nests by calling the Directorate of Public Works Operations and Maintenance (O&M).

Oak processionary caterpillar warning sign.

Ticks

Ticks may carry harmful diseases.

Tick-borne diseases

Lyme disease is caused by bacteria from the bite of an infected tick. The first symptoms of Lyme disease are the bull's eye rash and/or flu-like symptoms that appear 5 to 29 days after infection. The rash only occurs in 50-70 % of human infections. **Proper treatment with antibiotics is necessary.** If untreated, Lyme disease may progress to a chronic stage that can be disabling and difficult to cure. There is no vaccination against Lyme disease. Further symptoms are often similar to the flu, such as pain in limbs and joints, elevated body temperature, night sweats, and extreme exhaustion after weeks or months.

Tick-borne encephalitis (TBE) is caused by a virus from the bite of an infected tick. Symptoms for TBE can be sudden fever as well as discomfort similar to the flu 2 to 20 days after a bite, but these symptoms only occur in 10-30 % of all infected persons. TBE cannot be treated with antibiotics but it is possible to get a vaccination.

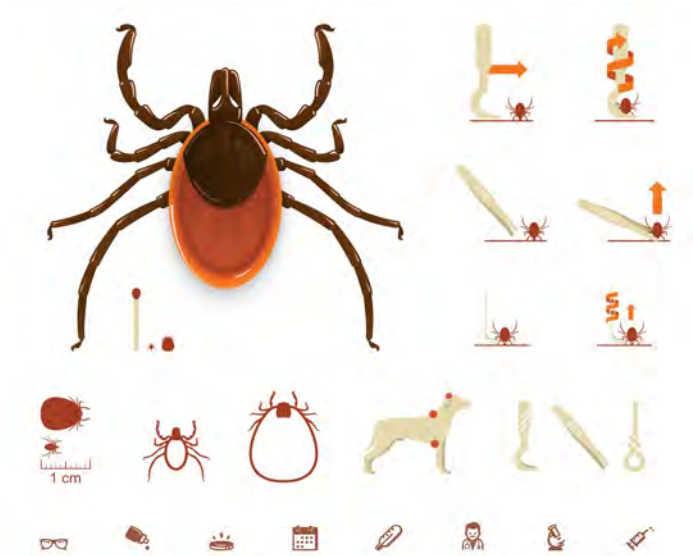
Basic facts

Ticks are small arachnids, typically 3-5 mm (0.11-0.2) long, that are widely distributed around the world. As ectoparasites (external parasites) ticks feed on the blood of mammals, birds, and sometimes reptiles and amphibians.

Ticks lurk in grass, bushes, leaves, and brush. They are increasingly present in urban parks and gardens. Contrary to popular belief, ticks do not fly, jump, or fall from trees to get to their hosts. Rather, they cling to leaves and grasses, waiting to grasp and climb on to any passing host. They prefer warm areas of your body, e.g., the hollows of the knee, the groin, the armpits, or behind the ears. Upon locating a suitable feeding spot, the tick grasps the host's skin and cuts into the surface to extract blood.

Bull's eye rash after tick bite is indicative of Lyme disease.

Ticks can carry bacteria or viruses that may result in serious infection or illness. In Germany, there is a **high potential to become infected with Lyme disease** (also known as borreliosis). In addition, up to 500 cases of **tick-borne encephalitis** (TBE), which can lead to meningitis (inflammation of the brain), are registered in southern Germany each year.



Remove ticks carefully with the appropiate tools and disinfect the bite.

Tick bites

Tick bites are mostly innocuous unless the tick is infected with the TBE virus or Borreliosis bacteria. To minimize the infection risk, ticks should be properly removed immediately after discovery, as the risk for infection increases with the length of the attachment time. The tick should only be removed with a tweezer or special tick cards placed close to the skin, and - without squeezing the tick‘s body - carefully and gently pulled out of the skin. The bite location must be disinfected after removing. If parts of the tick still remain in the skin or with the occurrence of inflammation, a doctor must be consulted. Do not apply substances such as petroleum jelly, fingernail polish, pesticides, or a lighted match to the tick while it is attached. This will make the tick regurgitate infectious fluid into the wound site, thus increasing the infection risk.

Mark the area of the tick bite to see any skin irritations and first signs of Lyme disease. Remember that symptoms may occur up to 4 weeks after the bite.

Never remove ticks by hand due to a higher risk for infection.

Precautions

In general, tick bites cannot be avoided, but there are various possibilities for protection:

- On forest walks **wear long, light-colored clothes** to allow for easier detection and to prevent ticks from finding a free pathway to the skin.
- **Insect repellent or special tick sprays** can help to avoid ticks but need to be reapplied frequently.
- After being outdoors **search clothing and body** for ticks. Check children and pets carefully.

Tick removal

- **Remove attached ticks** immediately with tweezers or tick card, never by hand.
- **Do not apply substances** such as petroleum jelly, fingernail polish, pesticides, or a lighted match to the tick while it is attached.
- **Mark the areas of the tick bite** to see any skin irritations and first signs of Lyme disease.
- **Visit a doctor** after identifying or experiencing any tick bite symptoms.
- **Get vaccinated against TBE. For information regarding the vaccination, please contact your local Health Clinic.**

Tick (Ger.: Zecke) warning sign in a forest.

Spiders

The yellow sac spider is one of two indigenous species in Germany that can penetrate human skin.

Indigenous species

In Germany, most spiders are harmless to humans. The only two indigenous species able to penetrate human skin are the yellow sac spider (*Cheiracanthium punctorium*, Ger.: Ammen-Dornfinger), a very rare spider only known to occur in notable numbers in the Kaiserstuhl region in Baden-Wuerttemberg, the hottest part of the country, and the diving bell spider or water spider (*Argyroneta aquatica*, Ger.: Wasserspinne), the only known species of spider that spends almost all its life underwater and is very rarely found in freshwater habitats in Germany.

The European garden spider (*Araneus diadematus*, Ger.: Gartenkreuzspinne), also known as cross orb-weaver in North America, is considered a venomous spider in Germany. However, it can only penetrate soft tissue (e.g., inside of the elbow, hollow of the knee), and its bite is no worse than a bee sting. They are widespread and common throughout Germany. As their name suggests, they prefer to live outside and rarely enter houses. Their orb webs are among the most advanced spider webs, built by laying spirals of silk around radial threads. They sit in the center of their web rushing out and wrapping any caught insect in sticky silk.

Basic facts

Spiders belong to the species-rich group of arachnids only outnumbered by the larger insect group. At least 45,700 spider species, of which 4,800 occur in Europe, have been recorded by taxonomists. Spiders play a very important role in our ecosystem. They catch many annoying and harmful insects, are not destructive, and should therefore be considered useful creatures.

In contrast to insects, which have six legs, all spiders have eight legs. Many spiders will build webs to catch prey, such as flies or mosquitos.

European garden spider is easily identified by cross-shaped markings.

Contrary to North America, where a small number of extremely venomous spiders - such as the black widow spider (genus *Latrodectus,* Ger.: Schwarze Witwen) and the brown recluse spider (*Loxosceles reclusa*, Ger.: Braune Einsiedlerspinne) - exist, spiders in Germany are **almost always harmless to humans**. Only a small minority of spiders can penetrate human skin, and the **effects of most bites are not serious**. Yet, there can be mild symptoms around the area of the bite, and some people might show allergic reactions.

If you experience strong reactions to a spider bite contact the Health Clinic.

Introduced species

Two species that are native to the Mediterranean region but have started to spread to Germany in recent years are the giant house spider (*Eratigena atrica*, Ger.: Große Winkelspinne) and the garage spider (*Zoropsis spinimana*, Ger.: Kräusel-jagdspinne). Both species are considerably larger than indigenous spiders in Germany and can, in theory, penetrate human skin. However, both species are also very reluctant to bite, preferring to flee. Their bite is reportedly similar to a mosquito bite.

Giant house spider, a newcomer to Germany.

Since both species cannot survive in harsh climates, they often seek refuge in human-inhabited areas and are frequently found in houses where the temperature is milder and food is more abundant. While some people may have a phobia of spiders, they play a very important role in our ecosystem. Even in your home, an "indoor ecosystem", spiders excel at keeping annoying and harmful insects in check.

The docile giant house spider can easily be confused with the North American hobo spider (*Eratigena agrestis,* Ger.: Feldwinkelspinne), which is considered to be far more likely to bite humans and doesn't occur in Germany.

Harvestmen

Harvestmen or daddy longlegs (*Opiliones* spp., Ger.: Weberknecht or Zimmermann) are an order of arachnids known for having exceptionally long legs relative to their body size. Unlike true spiders, their body consists of a single part rather than two. Their long legs allow them to span large distances between leaves and twigs as they climb about vegetation.

The most widespread species of daddy longlegs in the world, occurring natively in Europe and much of Asia, is the harvestman (*Phalangium opilio,* Ger.: Weberknecht*)*. It is found in a wide range of habitats including meadows, bogs, forests, and various types of anthropogenic habitats, such as gardens, fields, hedgerows, lawns, quarries, walls, and bridges.

They are not pests, but very beneficial and medically harmless members of the class Arachnida. They can sometimes be a nuisance if there are dozens congregated, but they are not harmful to humans, animals, buildings, or crops.

***Phalangium opilio* is the most widespread species of harvestmen.**

Contacts

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Building 389
DSN: 475-7209
CIV: 09641-83-7209

Hohenfels Environmental Division
Building 34
DSN: 522-2658
CIV: 09642-83-2658

Hours of Operation: Mon - Fri, 8 a.m. - 4 p.m.

Closed on US and German Holidays

Health Concerns

Tower Barracks Health Clinic
Building 475
DSN: 590-3000
CIV: 06371-9464-3000

Rose Barracks Health Clinic
Building 260
DSN: 590-2300
CIV: 06371-9464-2300

Hohenfels Health Clinic
Building 51
DSN: 590-3300
CIV: 06371-9464-3300

After Hours Phone/Nurse Advice Line – 0800-825-1600
Ambulance – 112

Wildlife Sightings/Encounters

Tower/ Rose Barracks
Military Police Front Desk
DSN: 476-3398/3397
CIV: 09662-83-3398/3397

Hohenfels
Military Police Front Desk
DSN: 466-2812/2713
CIV: 09472-83-2812/2713

Garmisch
Military Police Front Desk
DSN: 440-3801/3827
CIV: 08821-750-3801/3827

Bird Rehabilitation Center – CIV: 09402-78-8857-10

Service Requests (vegetation removal, pest control, etc.)

USAG Bavaria DPW Call Center
DSN: 475-6324
CIV: 09641-83-6324

Online Resources

https://home.army.mil/bavaria/index.php/environmental
https://www.facebook.com/USAGBavaria/
https://www.facebook.com/USAGEnvironmental/

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Notes

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Products with an FSC label come from forests certified as being
in compliance with the environmental and social standards of
the Forest Stewardship Council.

This handbook provides fascinating insights into the flora and fauna present at USAG Bavaria, how you can help protect them, and what to do when you encounter them in your daily life.

https://home.army.mil/bavaria/index.php/environmental

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