Bark beetle management

Strategies against bark beetles - for a healthy forest

2023

witasek®
www.witasek.com

Bark beetle danger – What to do?

When it is not damage due to storm or freezing that creates timber material in which bark beetles can breed unchecked, then it's drought that weakens trees, making them more readily susceptible to bark beetle attack. This is the case for all bark beetle species.

But which for us is the most problematic? The most dreaded bark beetles in Central Europe - because they have a predilection for the spruce, the tree that is the backbone of the forestry industry - are:

- The larger eight-toothed European spruce bark beetle *(Ips typographus)*
- The six-toothed spruce bark beetle *(Pityogenes chalcographus)*

The larger eight-toothed European spruce bark beetle *(Ips typographus)*

The six-toothed spruce bark beetle *(Pityogenes chalcographus)*

These beetles hibernate over winter in tree bark or the ground litter, become active at ambient temperatures of 14 - 17°C and then go in search of suitable material where they can breed and lay their eggs.

Bark beetles like their booze

The substance most likely to attract them in the near vicinity is alcohol, in this case in the form of fermented sap. Any beetles present in the neighbourhood will follow the corresponding scent trail and then bore into the wood. These bark beetles then release species-specific chemicals called aggregation pheromones that attract other beetles of both sexes.

Mating occurs in the brood chambers created by the males. The females dig out passageways in which they lay their eggs and the larvae emerge 1 - 2 weeks later. These eat their way through the walls of the egg passageways into the inner bark, leaving behind the typical pattern of frass pathways (see image for an example).

They subsequently pupate and finally become adult beetles. Depending on temperature, an egg can develop into an adult within just 5 - 7 weeks. The young beetles emerge from their burrows to search for material where they in their turn can mate, preferring that of already damaged trees, and the whole cycle repeats itself.

Which trees do they find most attractive? And why?

Damage to trees caused by drought, loss of treetop, storms, excessive snow pressure, ice, lack of water supply, insufficient nutrients, mechanical injury, inappropriate siting etc. etc. can provide a situation in which there can be uncontrolled reproduction of the beetles.
It is this kind of damage that makes a tree particularly attractive for bark beetles. What can entice them are:

a.) Fermented sap (alcohol)
b.) Chemical signals emitted by trees (kairomones)
c.) The way that there is altered reflection of sunlight from the bark and leaves of weakened trees.

How do you determine whether you have infestation by bark beetles and what measures can you take?

One of the most important ways to prevent infestation is to maintain appropriate forest hygiene. But don't leave it too late. If you come across a tree already showing signs of discolouration, you can bet that the beetles that were the cause of it have already emerged, flown off and have bored themselves into other trees. So always keep a sharp lookout for any signs of possible infestation so that you can intervene as soon as possible.

If you notice any of the following, you need to act quickly to prevent the risk of proliferation of bark beetles:

- Brown bore dust at the foot of trees, caught in spiders' webs or present on bark scales
- Holes created by woodpeckers
- A tree that looks unwell
- Green needles on the forest floor

Ways of managing and trapping bark beetles

You can create a trap wood pile in spring (in other words, 3 - 4 weeks before the beetles take flight). For this purpose, suitably prepare an existing clearing in which you cut down a tree that is typical of the area and use the wood of this to make a beetle trap. This needs to be positioned so that there is a safety zone of 12 - 15 m between the wood pile and healthy trees as otherwise these could also become infested.

The trap wood pile needs to be regularly checked so that, if there is significant infestation, it can be removed from the forest or debarked on site. Alternatively, you can apply an insecticide (such as Karate® Zeon Forest) to your trap wood pile to ensure that the beetles are killed when boring into and out of the wood. The best results are achieved if you apply a pheromone attractant to the shady side of the wood pile.

Bear in mind: trap wood piles are only really effective in spring.

Important! A trap wood pile must be removed from the forest 3 weeks at the latest after you see the first bore hole - after this, the females will begin to emerge and start generating sibling broods!

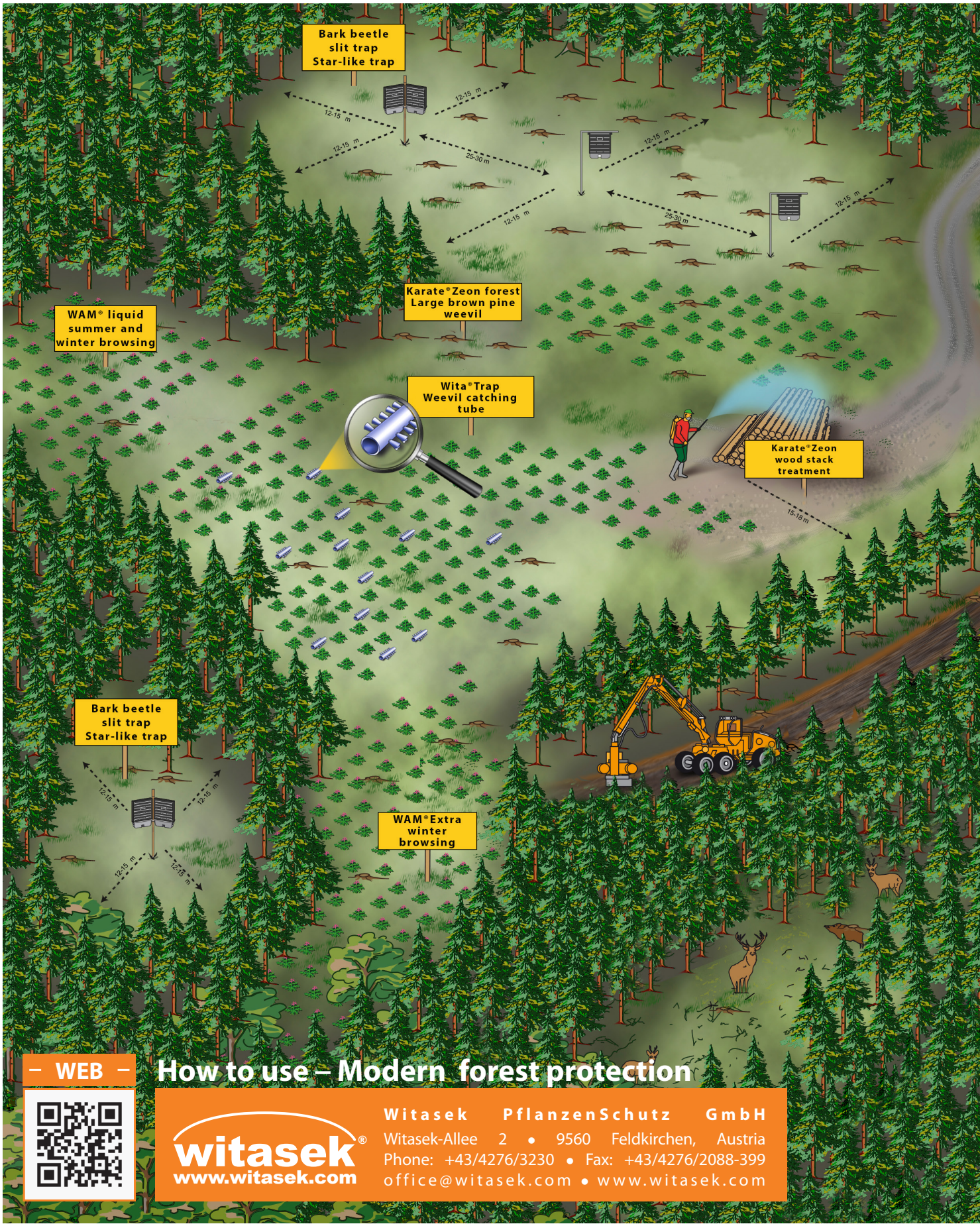
Pheromone traps

There are many different kinds of these traps available. Most commonly used are so-called "slit traps". One of our Witasek developments and suitable for use for mass trapping of bark beetles is our MultiWit® slit trap; this can be used for both the dry and wet trapping methods.

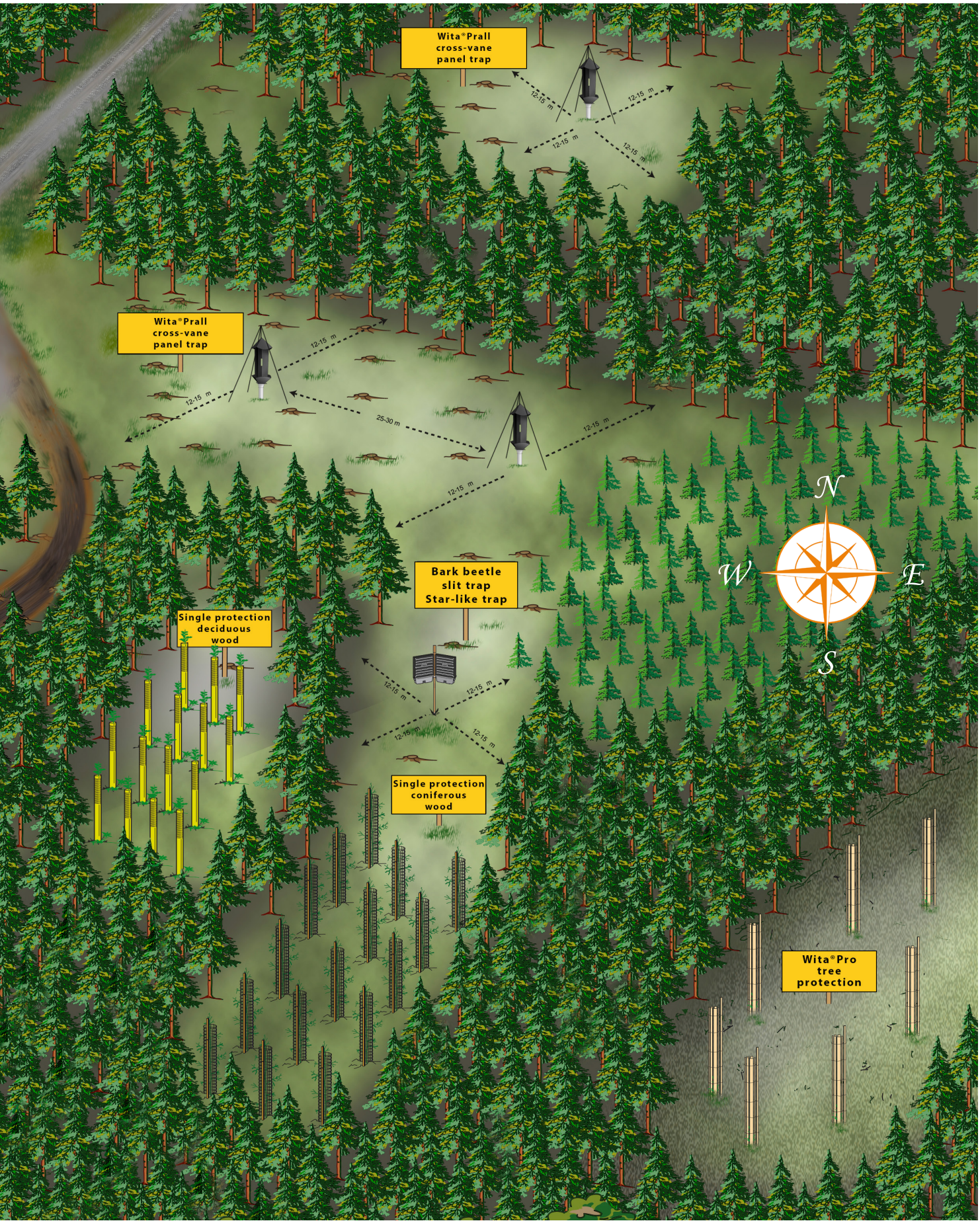
Pheromones are supplied in:

Dispensers
Ampoules
Tubes

THE RIGHT USE OF FOREST PROTECTION MEASURES



All forest protection measures require their proper use. The image below gives you an impression on the practical use of our forest protection products with a focus on bark beetle control. The image below is designed to serve as a recommendation only. Please read label and product information before use.



WitaTrap® Bark Beetle Slit Trap

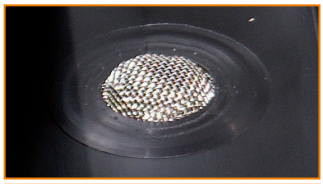
Our "proven" standard trap with the tried and tested Capture Container for dry trapping methods

Complete with standard Capture Container (standard trap-tub).

WitaTrap® Bark Beetle Slit Trap

- **Especially smooth surface** – bark beetles **cannot grab hold**, they immediately slide down and fall through the entry slits into the capture container (trap-tub).
- additional screw connections for **greater stability**
- enhanced arrangement of entry slits
- **WitaTrap® Trap-Tub features:**
  All plastic strainers were replaced by welded-in steel strainers.
  Furthermore, cambered strainers and the characteristics of the material they are made of facilitate a faster drainage of rain water.
- **top quality material – durable for several years**
- trap body dimensions: 50 cm high, 49 cm wide, 6.5 cm deep (excl. entry slits)
- colour: dark brown/black
- **Don't forget to order the right pheromone!**

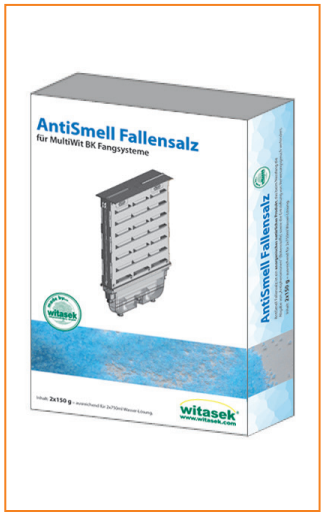
item no.	product
314031	**WitaTrap® Bark Beetle Slit Trap** (without stayer) (6 pieces/box)



WitaTrap® Trap-Tub features new steel strainers

AntiSmell Trap Salt

Trap Salt for wet trapping bark beetles with the MultiWit® Trap-Tub



For the wet trapping of bark beetles with the MultiWit® Trap-Tub and the MultiWit® Bark Beetle Slit Trap.

AntiSmell Trap Salt is a natural, inorganic product that, when used in trapping systems with catch liquids, prevents the release of pheromones (messenger substances) deterring other bark beetles and deodorises the smell of decaying beetles caught in traps.

With one 150 g package you can obtain 700 ml of the salt-water-solution = one trap-tub filling.

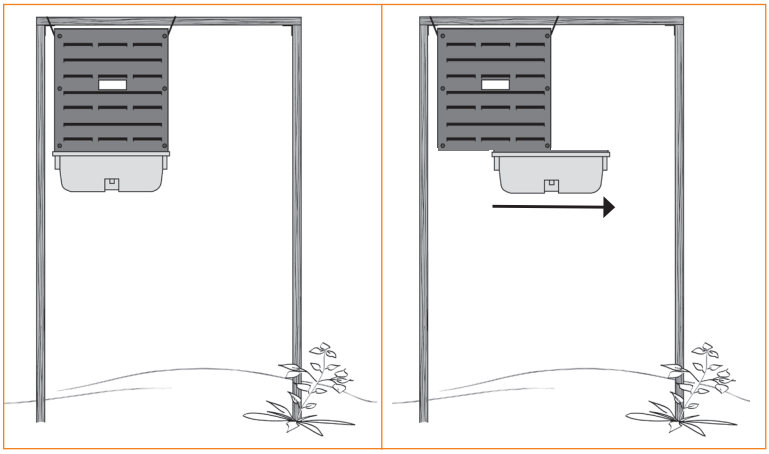
- One filling can suppress the smell of approx. 15,000 to 20,000 bark beetles. Thus, traps only need to be checked every 4 to 8 weeks, depending on flight intensity and flight duration (saves time and money).

Disposal: AntiSmell Trap Salt has food quality – therefore the salt or salt-water-solution can be disposed of with no problem in the household trash.

item no.	product
391411	**AntiSmell Trap Salt** (shipping unit: 1 pack = 2 x 150 g)

Example of the assembly of a bark beetle slit trap

- Acacia Stakes are best suitable
- use cable ties or wire to attach to stake
- install trap so that there is sufficient clearance to pull out trap-tub
- secure trap so that it cannot be moved by the wind



Trap Stand for Three Bark Beetle Slit Traps

The easiest way to install three bark beetle slit traps in a star-like arrangement

Catch numbers with star-like trap arrangements consisting of three traps are much higher than those of individually installed traps

Star-like arrangement facilitates catches from all directions: Bark beetles attracted can **perceive trap walls from all directions**. **This ensures high catch numbers, irrespective of wind directions.**

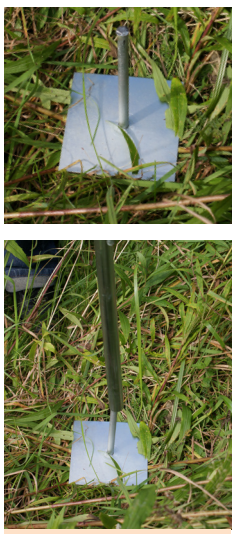
- complete with connectors and anchoring cable
- dip treated for rust prevention
- Although three traps are used, only **one pheromone dispenser** is required.
- attracting effect of 360°
- The height is adjustable.

– VIDEO –

Three traps installed on trap stand

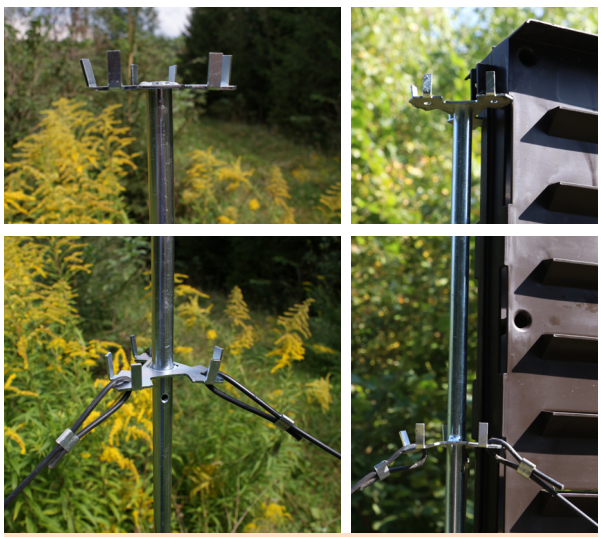
item no.	product
313211	**WitaTrap® Bark Beetle Trap Stand for Three Traps** (without traps)

How to install a star-like trap arrangement consisting of three traps:



Drive anchor into ground ....

... place trap stand on it. Tighten the three guy ropes and use the pegs provided to secure stand to ground ...



... mount the three bark beetle slit traps on the stand.
Tip: Use pliers to bend and, thereby, slightly open hooks to facilitate installation.

WitaTrap® Multi Funnel Trap

Trap for wet and dry trapping of bark beetles, also suitable for metallic wood-boring beetles and long-horned beetles

With Wita® Universal Capture Container!

- **very low priced**
- **easy to assemble and install**
- easy to clean, **room-saving** storage
- **with Wita® Universal Capture Container!**
- transparent capture container facilitates trap checks
- suitable for wet and dry trapping method
- **Don't forget to order the right pheromone!**
- For wet trapping use AntiSmell Trap Salt.

The bayonet lock of the new Wita® Universal Capture Container ensures an optimal hold on the end segment of the WitaTrap® Multi Funnel Trap.

item no.	product
310641	**WitaTrap® Multi Funnel Trap – 5 segemnts + 1** incl. Wita® Universal Capture Container (5 pieces/box)
310651	**WitaTrap® Multi Funnel Trap – 11 segemnts + 1** incl. Wita® Universal Capture Container (4 pieces/box)

Wita®Prall Cross-vane panel trap

Trap for wet and dry trapping of bark beetles, also suitable for metallic wood-boring beetles and long-horned beetles like e.g. pine sawyer beetle *(Monochamus galloprovincialis)*

With Wita® Universal Capture Container!

- **easy to assemble and install**
- **with Wita® Universal Capture Container!**
- suitable for wet and dry trapping method
- hollow chamber material (PP), UV stable
- **Don't forget to order the right pheromone!**
- For wet trapping use AntiSmell Trap Salt.

Optional protection from strong wind: The bayonet lock on the new Capture Container ensures an optimal hold to the adapter of the Wita® Prall Cross-vane panel Trap. There are, in addition, four holes on the bayonet ring of the adapter which can be used to protect the Capture Container with an additional piece of wire (e.g. paper clip) in locations which are particularly exposed to the wind.

item no.	product
315631	**Wita®Prall Cross-vane panel trap** (5 pieces/box)
	Spare parts available upon request!

Wita® Universal Capture Container

The Wita® Universal Capture Container for the WitaTrap® Multi Funnel Trap and Wita®Prall Cross-vane panel Trap.

designed for the WitaTrap® Multi Funnel Trap and Wita®Prall Cross-vane panel Trap

The Wita® Universal Capture Container is universally applicable and designed for the WitaTrap® Multi Funnel Trap and Wita®Prall Cross-vane panel Trap.

Technical data:
- capacity: 1,000 ml before overflow
- caterial: PP (polypropylene)
- UV-stabilised

Dimensions:
- height: 27 cm
- diameter with bayonet ring: 102 mm
- weight incl. lid: 170 g

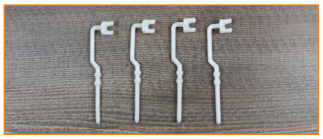
Bayonet lock with safety lock
The bayonet lock facilitates maintenance work and provides for an optimal hold of the Capture Container even in windy locations.

Wet and dry trapping method
Cambered stainless steel sieves on the outflow (at the bottom) and on both side overflows enable excess water to run off properly. The finely woven net structure prevents insects from escaping. The stainless-steel sieves are very durable and dimensionally stable.
With the wet trapping method, overflow sieves provide for good drainage of excess rainwater. In addition, the AntiSmell Trap Salt (page 60) can be used to suppress the smell of the decomposing beetles in the trap.
The outflow sieve at the bottom guarantees drainage of rainwater with the dry trapping method.

Base
Three stable legs enable the bottle to be placed on the ground for maintenance work without tipping over. This facilitates maintenance work on the trap.

Lid for wet trapping
With the wet trapping method, the lid is placed on the outflow on the bottom to seal it. The lid is additionally attached with a cord to the trap to prevent it from getting lost.

Retrofit accessories: Adapter for Wita®Prall Cross-vane panel Trap



Hooks for Adapter Wita®Prall Cross-vane panel Trap

item no.	product
310711	**Wita® Universal Capture Container**
Retrofit accessories	
315681	**Adapter for Wita®Prall Cross-vane panel Trap** incl. hooks
Spares	
310721	**Lid for Wita® Universal Capture Container**
315661	**Hook for Adapter for Wita®Prall Cross-vane panel Trap**

Universal Trap Stand

Universal trap stand for traps (e.g. multi funnel traps, cross-vane panel traps)

SERVICE PRODUCT

Scope of delivery without trap

The innovative trap stand enables easy installation of trap systems such as WitaTrap® multi funnel trap, Wita®Prall cross-vane panel trap, and much more and ensures their secure hold. No additional, bulky construction materials have to be taken along or searched for at the installation site.

- overall height approx. 2.80 m
- 3-part telescopic feet, continuously adjustable in height
- light weight
- easy to assemble - according to instructions
- high quality aluminum construction - height adjustable
- Uneven floors are easily compensated for by the telescopic rods.
- The pressed-in tips ensure the best grip in the ground.
- includes pegs for attachment to the surface
- note other fastening options as described (drive in acacias on the feet)
- Traps attached to the universal trap upright can be tied to the feet with a cord/thread. So the trap doesn't move in the wind.
- shipping unit:
  - 1 trap stand (high quality aluminium)
  - incl. pegs for an easy installation on the ground

item no.	product	price (in €)	
		excl. VAT	incl. VAT
315951	**Universal Trap Stand** shipping unit: 1 Universal Trap Stand incl.pegs	per piece	

Bark Beetle Measuring Cup

Bark Beetle Measuring Cup - to easily count the beetles caught

SERVICE PRODUCT

Bark Beetle Measuring Cup is available in 2 sizes (100 ml and 250 ml).

catch number conversion:

- 1 ml of European spruce bark beetles equals approx. 40 beetles
- 1 ml of ambrosia beetles equals approx. 130 beetles
- 1 ml of six-toothed spruce bark beetles equals approx. 600 beetles

item no.	product	price (in €)	
		excl. VAT	incl. VAT
315851	**Bark Beetle Measuring Cup – 100 ml**	per piece	
315861	**Bark Beetle Measuring Cup – 250 ml**	per piece	

PHEROMONES TO ATTRACT EUROPEAN SPRUCE BARK BEETLE (Ips typographus)

Ipsowit® Standard

Pheromone to attract European spruce bark beetle *(Ips typographus)***, in proven dispenser foil packing**

IPSOWIT® STANDARD
IPSOWIT® Standard is for all the periods during bark beetles are in flight. If IPSOWIT® FJ was used for catching the first swarm flight, IPSOWIT® Standard can be seamlessly deployed afterwards. That means that consistent catching rates can be guaranteed, even over the summer months. The composition of this bait provides the usual high level of attraction for the European spruce bark beetles.

- effective: 6 to 8 weeks (depending on weather conditions)

item no.	product
323411	**Ipsowit® Standard** (pack of 5 pcs.)

Pheroprax® Ampoule

Pheromone to attract European spruce bark beetle
(Ips typographus)

Liquid pheromone is filled in **double-chamber ampoule** – fill level of ampoule is easily visible and a new ampoule can be hung next to the old one when necessary.

- effective: 6 to 8 weeks (depending on weather conditions)

item no.	product
324411	**Pheroprax® Ampoule**

PHEROMONES TO ATTRACT SIX-TOOTHED SPRUCE BARK BEETLE (Pityogenes chalcographus)

Chalcowit®

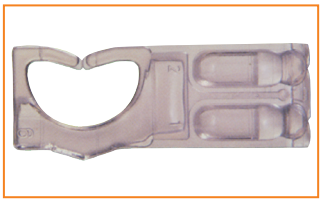
Pheromone to attract six-toothed spruce bark beetle *(Pityogenes chalcographus)* **in proven dispenser foil packing**

Standard pheromone with constant catch rates during all flight periods.

- effective: 6 to 8 weeks (depending on weather conditions)

item no.	product
321411	**Chalcowit® – Dispenser Technology** (pack of 5 pcs.)

Chalcoprax® Ampoule



Pheromone to attract six-toothed spruce bark beetle
(Pityogenes chalcographus)

Liquid pheromone is filled in **double-chamber ampoule** – fill level of ampoule is easily visible and a new ampoule can be hung next to the old one when necessary.

- effective: 6 to 8 weeks (depending on weather conditions)

item no.	product
321211	**Chalcoprax® Ampoule**

KombiWit® Tube with long term effect

Long-term pheromone to attract European spruce bark beetle *(Ips typographus)* and six-toothed spruce bark beetle *(Pityogenes chalcographus)*, filled in a special tube ampoule that allows you to check the fill level.

combined pheromone

The fact that the European spruce bark beetle and the six-toothed spruce bark beetle often occur together suggests to use a combined pheromone to attract both of them to a trap. KombiWit® Tube offers you this opportunity.

- Effective: up to 20 weeks – One ampoule usually lasts up to one complete vegetation period, depending on weather conditions. The duration of action is considerably reduced at very high temperatures.
- Alternatively, separate pheromones for European spruce bark beetle and six-toothed spruce bark beetle can be used in trap.
- the filling level of the tube can be seen

One tube dispenser for two bark beetle species – effective for the whole season!

item no.	product
323711	**KombiWit® Tube – with long term effect**

PHEROMONES (ATTRACTANTS)

Insect	Name	Pheromone	
 © U.Schmidt 2006	**European spruce bark beetle** *(Ips typographus)*	item no.	product
		323411	**Ipsowit® Standard**
		(pack of 5 pcs.)	
		324411	**Pheroprax® Ampoule**
		(pack of 5 pcs.)	
 © U.Schmidt 2006	**combined pheromone** European spruce bark beetle (Ips typographus) + six-toothed spruce bark beetle (Pityogenes chalcographus)	item no.	product
		320611	**Kombiwit® Tube**
		(pack of 1 pc.)	
 © U.Schmidt 2006	**eight-toothed spruce bark beetle** *(Ips amitinus)*	item no.	product
		320611	**Amitinuswit®**
		(pack of 5 pcs.)	
 © BFW-Forstschutz	**six-spined engraver beetle** *(Ips sexdentatus)*	item no.	product
		324811	**Sexowit®**
		(pack of 5 pcs.)	
 © U.Schmidt 2006	**larch bark beetler** *(Ips cembrae)*	item no.	product
		320811	**Cembräwit®**
		(pack of 5 pcs.)	

Insect	Name	Pheromone	
 © U.Schmidt 2006	**six-toothed spruce bark beetle** *(Pityogenes chalcographus)*	item no.	product
		321411	**Chalcowit® Dispenser**
		(pack of 5 pcs.)	
		321211	**Chalcoprax® Ampoule**
		(pack of 1 pc.)	
 © U.Schmidt 2006	**striped ambrosia beetle** *(Trypodendron lineatum)* **comined pheromone for Trypodendron species**	item no.	product
		325611	**Trypowit®**
		323821	**Lineatin Kombi®**
		(pack of 5 pcs.)	
 © BFW-Forstschutz	**silver fir bark beetle** *(Pityokteines curvidens)*	item no.	product
		321811	**Curviwit®**
		(pack of 5 pcs.)	
 © U.Schmidt 2006	**engraver beetle** *(Ips acuminatus)*	item no.	product
		320411	**Acuwit®**
		(pack of 5 pcs.)	
 © BFW-Forstschutz	**(common and lesser) pine shoot beetle** *(Tomicus piniperda, T. minor)*	item no.	product
		325211	**Tomowit®**
		(pack of 5 pcs.)	

This is only a selection of our pheromone products. See our main catalogue at www.witasek.coom for further attractants.

Karate® Zeon Forest

Fast acting insecticide, effective at very low wash concentrations, against pine weevils and bark beetles *(except: Xylosandrus)*, free feeding moth caterpillars, plant lice and beetles feeding on leaves and needles (except cockchafer)

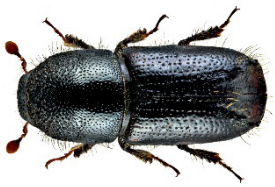
- use: to control insect pests in forestry, also suitable for use with trap wood piles
- active substance: lambda-cyhalothrin (pyrethroid)
- formulation: **encapsuled suspenion** – When the water in the emulsion has evaporated, the micro-capsules burst and release the active substance.
- effective: 6 weeks
- UV stable
- rain-proof one hour after becoming touch-dry
- dipping treatment: do only dip shoot and root collar into wash, do not apply to roots
- Karate® Zeon is an immediately and strongly acting insecticide with a combined effect of contact and ingestion for the control of all mobile stages of the pest insect.

• NEW: 500 ml bottle

Karate® Zeon 1 l, Pfl. Reg. Nr.: 3061
Karate® Zeon 500ml, Pfl. Reg. Nr.: 3061-901

item no.	product
512321	**Karate® Zeon Forest** (shipping unit: 1 bottle)
512331	**Karate® Zeon Forest** (shipping unit: bottle with 500 ml)

Application and concentration – Karate® Zeon:


© U.Schmidt 2006

Karate® Zeon for the control of bark and wood breeding beetles (bark beetles)

except Xylosandrus germanus for the treatment of trunks

	Treatment of individual trunks (standing or lying) and wood stacks	
	If potential threat has been determined (prevention):	Before flight of beetles (beetles are already in wood):
Concentration of wash	0,2 % (= 2 ml Karate for 1 l wash)	0,4 % (= 4 ml Karate for 1 l wash)
How much wash does 1 l Karate provide?	500 l	250 l
wash consumption	**Individual trunk or stack** **5 l wash per m³** wood for individual trunks 3 l wash per m³ wood for stacks (5 l wash per m³ for thicker trunk stacks)	
Calculation and application rate for Karate® Zeon	Treatment of individual trunks or thick trunk stacks: Amount Karate® Zeon in litre = $\frac{\text{m}^3 \text{ wood}}{100}$ Treatment of wood stack: Amount Karate® Zeon in litre = $\frac{\text{m}^3 \text{ wood}}{170}$	Treatment of individual trunks or thick trunk stacks: Amount Karate® Zeon in litre = $\frac{\text{m}^3 \text{ wood}}{50}$ Treatment of wood stack: Amount Karate® Zeon in litre = $\frac{\text{m}^3 \text{ wood}}{83}$

For the mass trapping of bark beetles!

MultiWit® Bark Beetle Slit Trap

Our bark beetle slit trap for mass trapping bark beetles, with the MultiWit® Trap-Tub suitable for wet trapping and dry trapping methods.

MultiWit® Bark Beetle Slit Trap, complete incl. MultiWit® Trap-Tub and Funnel.

Slit traps are outstanding biotechnological monitoring and control systems for bark beetles (European spruce bark beetle, six-toothed spruce bark beetle, striped ambrosia beetle, pine shoot beetle, lesser pine shoot beetle, larch bark beetle etc.).

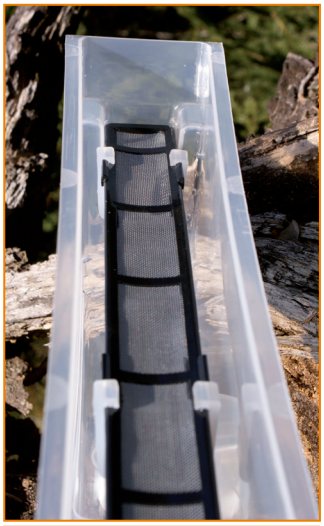
- **Especially smooth surface** – bark **beetles cannot grab hold**, they immediately slide down and fall through the entry slits into the trap-tub.
- additional screw connections for **greater stability**
- enhanced arrangement of entry slits
- **top quality material – durable for several years**
- **Features the tried and tested trap-tub and rain gutter:**
  All plastic strainers were replaced by welded-in steel strainers.
  Furthermore, cambered strainers and the characteristics of the material they are made of facilitate a fasterdrainage of rain water.
- trap comes with a pack of AntiSmell Trap Salt that we recommend for the wet trapping method
- trap body dimensions:
  50 cm high, 49 cm wide, 6.5 cm deep (excl. entry slits)
- colour: dark brown/black
- **Don't forget to order the right pheromomes.**

– VIDEO –

item no.	product
314051	**MultiWit® Bark Beetle Slit Trap** – incl. 1 pack of AntiSmell Trap Salt (without stayer) (6 pieces/box)

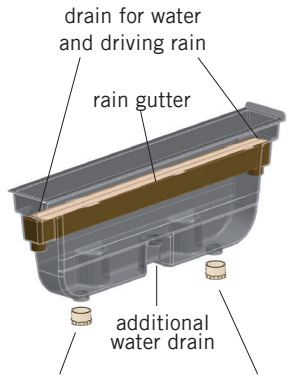
For wet trapping:
Plug caps are installed.

Rain Gutter with Steel Strainer for MultiWit® Trap-Tub.



MultiWit® Rain Gutter featuring steel strainer in our MultiWit® Trap-Tub.

MultiWit® Trap-Tub for Bark Beetle Slit Traps



All plastic strainers were replaced by steel strainers.

The best trap-tub for mass trapping bark beetles (wet trapping) – complete, without funnel

- Designed for **MulitWit® Bark Beetle Slit Trap – can also be used with all other slit trap types** (e.g. Theysohn, Ridex, etc.) and funnels.
- **Trap-tub can be used for catching all bark beetle species** – e.g. European spruce bark beetle *(Ips typographus)*, six-toothed spruce bark beetle (*Pityogenes chalcographus*)
- **top quality material – durable for several years**
- **welded-in steel strainers prevent the catched beetles from escape.**

item no.	product
313111	**MultiWit® Trap-Tub complete without funnel**

Our Trap-Tub gives you the choice between several trapping methods!

Wet trapping:
Beetles are killed immediately in the water-salt-solution: no release of pheromones that would deter other bark beetles, no smell of decaying beetles.

For wet trapping:
Plug caps are installed.

For dry trapping:
Plug caps are removed, water can escape through cambered steel strainers (rain gutter remains installed).

Wet trapping:

Trapping systems with catch liquids have proven to be most effective for the control of massive amounts of bark beetles. These methods require the trap-tub to be filled with water and AntiSmell Trap Salt to achieve constantly high catch results.

The following tips will allow you to increase catch numbers and save time and labour:

- **No messanger substances:** Bark beetles caught die very quickly in the water-salt-solution (AntiSmell Trap Salt, see page 60) in the trap and therefore are no longer able to release messenger substances which could deter other beetles from approaching the trap. This ensures constantly high catch numbers and reduces the danger of an infestation of standing trees considerably.
- **No smell of decaying beetles:** Conventional trapping systems do not suppress the smell of decaying beetles and thus the pheromones cannot have the desired attracting effect. This is why it is essential to check and empty dry trapping systems on a weekly basis. When trapping systems with liquids are used (wet trapping) the water-salt-solution neutralises the smell of decaying beetles and the attracting effect of pheromones remains unaffected. As a consequence, catch rates constantly remain at a high level and traps only need to be checked every 4 to 8 weeks, depending on flight intensity and flight duration.
- **Catch liquid concentration:** A specially designed gutter featured in the MultiWit® Trap-Tub leads rainwater out of the trap so that the concentration of the catch liquid remains effective. When too much water enters the trap, an additional water drain in the middle of the tub draws off the excess water.
- **colour:** transparent, allows easy trap checks to determine your catch success

Dry trapping:

Trapping systems without catch liquids are ideally suitable for monitoring bark beetle populations in their main flight periods. The transparent trap-tub facilitates weekly checks of traps and catch success, and the beetles caught can be easily counted. When the trap-tub is used for dry trapping, plug caps are removed from the drains of the MultiWit® Trap-Tub so that water can run off (i.e. conventional system).

Depending on your needs, you can switch between monitoring (dry trapping) and mass trapping (wet trapping) during the flight period.

Please read the instructions enclosed before use, also available for download at www.witasek.com.

Bark beetle counting system

a forestry management 4.0 development

Coming soon Spring 2024

Forestry management 4.0 is even progressing in the sphere of bark beetle monitoring. What is already standard practice in the sector of fully mechanical timber harvesting, was and is still at the cutting edge when it comes to forestry management. The innovative, creative and exciting project that had the aim of creating the bark beetle counting system had its origin in a concept that was first conceived in 2020.
The bark beetle counting system can be used in combination with the WitaPrall®cross-vane panel trap or the WitaTrap® multifunnel trap by Witasek. In the case of the WitaTrap® cross-vane panel trap, the counting system is mounted between the adapter and the universal capture container.

As is customary, a pheromone (from a dispenser or ampoule) within the trap is used to attract the beetles. When they follow the pheromone scent trail they land directly in the trap and then collide against the panels or the segments of the multifunnel, causing them to fall into the capture container. At this point, it would normally be necessary to count the beetles by hand and it would also not be possible to obtain real time information on when beetles were actually captured.
With the new and intelligent counting system, it is possible to automatically obtain data on the numbers of bark beetles caught at any particular point in time. A sensor rod with photoresistors inserted in the capture container is able to detect the volume of beetles present. Using the mobile phone network, the system sends the information to the Cloud, from where it can be downloaded using an app or computer. This means that any necessary measures can be initiated as soon as possible.

The approximate number of beetles can be determined on the basis of the recorded volumes:

- 1 ml spruce bark beetles (Ips typographus) is roughly equivalent to 40 beetles
- 1 ml striped ambrosia beetles (Trypodendron lineatum) is roughly equivalent to 130 beetles
- 1 ml six-toothed spruce bark beetles (Pityogenes chalcographus) is roughly equivalent to 600 beetles

The counter system is also equipped with a GPS sensor so that users can always see on a map where their traps are located. There is additionally a temperature sensor so that it can be determined at what mean temperatures the beetles tend to take flight. Sufficient power is provided by the integrated battery to ensure the system operates for a whole year.

The counter system can be used with both wet and dry traps. If a dry trap is used, it will be necessary to empty capture containers every week, otherwise the stress and defence hormones released by captured beetles will repel other beetles from the trap. If a wet trap is used, this will not be necessary, because the AntiSmell trap salt mixed with the water will prevent release of the hormones and other unwanted scents. However, even in this case containers should be emptied after 8 weeks at the latest or sooner if they are already full. As in the case of the use of a standard trap, such as the WitaTrap® slit trap, traps should be positioned at a suitable distance (12 - 15 m) from the edge of the forest and healthy trees.

Our system is ready to go into production but will first be subjected to a series of tests in 2023 so that we will be ready to market our Witasek bark beetle counting system in 2024, providing forestry managers with an innovative tool for protecting their woodland.

– WEB –

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