

Protocol and risk assessment for installation of artificial pine marten den boxes



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David Tosh & Josh Twining	1.0	5 th February 2018

Introduction

This document has been produced to provide guidance on the installation of the Vincent Wildlife Trust's artificial pine marten den box (<http://www.vwt.org.uk/wp-content/uploads/2015/04/constructing-erecting-and-monitoring-pine-marten-den-boxes-2014.pdf>). The protocol here has been developed through direct experience gained by the authors and via discussions with pine marten den box pioneers Dr Jonny Birks and Mr John Martin. Contained within is a protocol that works for us and meets the requirements of landowners that we work with. It should not be taken as the sole way of installing boxes but is a way that meets our requirements. However, we hope this document will act as a foundation for your endeavours in the world of den boxing.

Equipment list

The height that the boxes have to be erected (> 3m) means that working at height can't be avoided. Therefore, the following equipment list (below, Figure 1) reflects the necessity of working at height and attempts to minimise any risk that this may cause. The list below is what we use on our project but similar items can be found from other manufacturers.

Kit list

1. Hard hat (EN 397:2012) with chin strap or climbing helmet (EN 12492:2012) – must have CE mark of conformity to EU PPE Directive (89/686/EEC) and
2. Steel toe-capped boots (EN ISO 20345 as minimum)
3. Climbing harness manufactured to ISO 9001 certified system (CE; EN 358:1999; EN 813:2008)
4. Carabiners x 4
5. Slings x 3
6. Petzl Pro-Traxion pulley (CE EN 567) working load = 5kN EN 12278 standard
7. Rope (CE EN892)
8. Ladder – must meet Class EN 131 standard as a minimum
9. Gloves
10. Blue nylon rope (meet weight classification of
11. Folding saw
12. Wet weather gear and warm clothing
13. First aid kit
14. Fully charged mobile phone
14. wratchett strap x 2

Regulations to consider:

Work at Height Regulations 2005 (WAHR)

Manual Handling Regulations 1992 As amended 2002.



Figure 1. Example of kit required to follow the protocol contained in this document.

Before going on site

1. Check Weather

Check weather and if conditions are forecast to be wet or windy then proceed with caution. If you get to site and conditions are wet or windy then do not proceed as wet or slippery equipment will increase the risk of an accident occurring.

Suggested sites: www.metoffice.gov.uk OR www.rte.ie/weather

2. Check condition of equipment

Check condition of ladder. Check the stiles, feet, rungs, locking mechanisms and steps for damage particularly dents or bent parts. If any defects are present the ladder should not be used. See HSE leaflet INDG455 for more details on what to look for.

Check condition of harness. Check the webbing at the attachment points, at the adjustment buckles and at the safety stitching. Look for cuts, wear and damage due to use, to heat or as a result of exposure to chemicals. Particularly look out for cut or loose threads. For further details of how to check a climbing harness see Petzl PPE Inspection Procedure for harnesses as an example. It is recommend climbing harnesses should be inspected annually by a competent person and a record of checks maintained.

Check condition of helmet. Follow manufacturer's instructions for storage and for interpreting damage.

Check condition of rope. Check condition of sheath over length of rope, check core, length etc. For further details see Petzl's PPE Inspection Procedure for ropes as an example.

Check working condition of pulley. Ensure all parts are functioning and that there is no obvious damage. Follow manufacturer's guidelines for guidance on how to do this.

3. Ensure land owners are aware of your presence

Liaise with landowner to ensure no forestry operations will be occurring in the proposed working area. If there is then seek an alternative site or do not go.

4. Ensure you know where you are going.

Consult a map prior to departure so you know where you are going in order to avoid use when driving.

5. Ensure details of where you are going and when expected to return are known

Leave details of where you will be working (including grid reference if possible) and the expected time of return. Ensure there is a protocol in place if you do not return at prescribed time.

6. NO LONE WORKING

Do not undertake attempt to install a den box on your own. We do not advocate lone working for the installation of VWT's artificial pine marten den box. We recommend waiting until you have partner prior to attempting to install a den box.

7. Ensure you know where the nearest accident and emergency is.

Prior to heading to site, ensure that you know where the nearest accident and emergency facilities are in relation to where you are working. Also ensure that you have a contact number for the nearest A&E in case you need to contact them prior to arrival. Also ensure that you have the contact numbers for any other emergency services that you may need to call upon.

Arrival at site

Choose a safe parking spot that does not obscure access to the site or other traffic that may be using the road. Do not obscure any exits or forest gates. Ensure your vehicle is parked facing the exit route to aid a prompt departure if required.

Assess on site conditions. If forestry operations are evident (as indicated by signage or noise of activity) in the area you propose to install a box, do not proceed. If no forestry activities are evident then proceed with caution. Do not walk under hanging or wind fall trees. Avoid climbing over fallen trees where possible.

Tree selection

This part of the protocol is not an exact science and will require judgement calls on the part of the installers but the following are learned experiences:

1. To avoid disturbance from other forest users, ensure the den box is sited on a tree away from human roads and paths. The locating of a box near existing animal trails may decrease the time it takes for the box to be “discovered” by martens;
2. Ensure any tree chosen for installation is living, has a straight trunk, doesn't have any obvious signs of disease and has a DBH of at least 20cm;
3. When choosing a tree, also ensure there are branches at a height of 3 to 4m that will allow the box to be hung on a tree. Also ensure the position of the branches on the tree will allow the box to be hung in a direction that is away from the entrances of the boxes;
4. In addition to ensuring branches are present to hang the tree, ensure there are branches above to allow the attachment of an anchor point for the person working at height and for the pulley system to be attached to (see below for further clarification);
5. As den boxes are typically installed in coniferous plantations, the species of tree that boxes are hung in are usually; scots pine (*Pinus sylvestris*); Norway spruce (*Picea abies*); Sitka spruce (*Picea sitchensis*), lodgepole pine (*Pinus contorta*) or Larch sp (*Larix sp.*). At present we are not aware of martens having a preference towards specific tree types when choosing den sites.

Erecting the box

Once at a suitable location and a tree has been selected the following should be undertaken (**NOTE: PPE should be worn by person on ladder and ground during above procedure**):

1. Clear area around base of the tree to ensure a clear working space and remove trip hazards as much as possible. Use hand saw to remove any low branches that may impede say use of ladder;
2. Erect the ladder against trunk of tree;

3. Secure base of ladder to the tree trunk using 1 ratchet strap (Figure 2);



Figure 2. Example arrangement for securing ladder to tree with ratchet strap.

4. Climb ladder to proposed working height and attach sling around tree at an anchor point ABOVE working position and attach to climbing harness with carabiner. Do this BEFORE attempting step 5 and always ensure a 2nd person is holding the ladder during this process;
5. Attach top of ladder to tree trunk with 2nd ratchet strap;
6. Whilst on the ground, attach two additional batons to the rear of the box (Figure 3). These will act to provide more stability for the box against the tree.
7. Prepare two lengths of the blue nylon rope for attaching the den box to the tree and loop them through batons. Tie a bowline knot on one end of each rope. Do this on the ground and not at height for an easier installation(Figure 3);



Figure 3. Additional wooden bars attached to box and blue rope attachment points

Once the ladder is safely in position and you have an attachment point for the person working at height, the following should be undertaken to attach the box to the tree. NOTE: prior to commencing work at height, determine the direction of prevailing wind for the area and ensure the entrances to the box face the opposite direction;

1. Climb the ladder, with the pulley, and attach to the tree using a climbing sling in combination with a carabiner. The sling should be wrapped round the tree and the ends secured with a carabiner. The pulley should then be attached to the carabiner. Ensure that the sling to which the pulley is attached, is secured point is on the tree trunk ABOVE the height at which the den box will be positioned (see Figure 4). This is important otherwise disconnecting the pulley and rope once box is in position will be difficult. NOTE it is advisable that the anchor point for the pulley is above a branch to ensure that if it slips it does not fall far;
2. Once the pulley is securely attached the rope should be connected to the pulley with a bowline at one end to which a carabiner will be attached. This will be lowered to the ground to pull up the den box;
3. On the ground, a single sling should have both ends looped through the two entrances of the den box as shown in Figure 5 (this will allow the box to be attached to the rope used to lift it into the tree using a carabiner);
4. The person on the ground should then attach the end of the rope with the carabiner (see step 2 above) to the sling inside the den box;
5. When the person on the ladder is safely in position, the person on the ground should raise the den box (by pulling on the rope attached to the pulley) to a suitable working height;



Figure 4. Example of set-up for installation of box. Black arrow indicates sling to which pulley is attached for lifting box into the tree. Note it is looped around trunk above a branch and is above installation point for box.



Figure 5. Image showing a sling inserted through the entrances of the den box with carabiner attached to aid lifting of box into tree.

6. Once at a suitable working height the person on the ladder should secure the first piece of nylon rope around the trunk ensuring it is hooked above a branch. To secure the rope, tie a bowline in one end and loop the other end through it before tying another knot to secure (Figure 6). This can be repeated a number of times to ensure if one knot fails another will be in position to act as a fail-safe (Figure 7).



Figure 6. Example of bowline used through which the other end of the rope is looped and secured to hold den box in place.



Figure 6. Example of the knots used to secure den box ropes in place.

7. Repeat Step 6 for the 2nd blue nylon rope but note there is less of a need to ensure 2nd rope is secured above a branch as weight will be carried by first rope (ensuring it is attached above a branch);
8. Once secure, detach pulley system from tree and lower it and rope to ground and then secure lid to box. NOTE: Ensure sawdust or local bedding material e.g. moss are used to line the bottom of the nesting chamber.

Following installation

On an annual basis check the condition of the following:

1. Condition of nylon rope securing box to tree. Loosen if needed to minimise damage to tree.
2. Condition of lid. This is usually the first thing to go, particularly if martens are marking the box with urine and scats.
3. General condition of box. Although marine timber is used on the box, it will deteriorate over time and it will need replaced.

When checking the den box for use by pine marten please consider the following:

1. Resting sites of pine marten are protected by law in the UK and Ireland. Therefore, if a pine marten is using a den box then it is illegal to check the den box without a license. If unsure of the legal situation then you should consult with your local Statutory Nature Conservation Organisation e.g. NPWS, Natural England etc.
2. Disturbance could lead to the abandonment of denning sites. Therefore, care should be taken to minimise disturbance as much as possible. Camera traps can be situated opposite den box entrances in adjacent trees or at ground level facing the base of a tree with den box. In addition, if den boxes are used by pine martens, scats can accumulate on the roof. Therefore, if you can locate an elevated position nearby, use of box can be confirmed by using binoculars.
3. When checking if a box is occupied, knock the side of the box before removing the lid and wait a few moments. This will give any occupants time to get out of the way.

Signs of use

Once installed the following are typically indicative of use:

1. Scats on top of box
2. Scats at base of tree
3. Scratches on bark and bark on ground at base of tree
4. Food items in resting chamber

RISK ASSESSMENT - 2018

Hazard	Risk	Who might be harmed	How to mitigate risk
Uneven/slippy ground	Trips, slips and falls whilst walking within forest when travelling from car to location den box will be erected.	All people involved with the erection of the den boxes	<p>Wear appropriate footwear that will provide adequate support.</p> <p>Be aware at all times of difficult walking environment and use forest roads or tracks as much as possible to minimise risk</p> <p>Ensure area around tree where den box is to be erected is clear of obstructions and material that could cause trips.</p>
Cold weather	Exposure, hypothermia	All involved with work	Always check weather prior to undertaking work and ensure appropriate clothing is worn i.e. if cold wear warm weather gear.
Fall from height	Head or other injury	Fieldworker on ladder attaching box to tree	<p>Protocol detailed above should be followed by person on ladder. To prevent falling from height:</p> <ol style="list-style-type: none"> 1. Ladder suitability for use should be checked prior to use. 2. Ladder should be safely secured to tree using ratchet straps. 3. At least 3 contact points should be maintained when climbing and working on ladder 4. In addition, a climbing harness should be worn and attached to the tree when fieldworker on ladder is working at top of ladder. 5. As much preparation work as possible should be undertaken on the ground to

			minimise the amount of time workers are on ladders.
Objects falling from height	Head or other injury	People on ground during den box installation	<p>Fieldworker at height may drop or dislodge material whilst working at height. Therefore, workers on ground should wear Hard hat (EN 397:2012) with chin strap at all times.</p> <p>Workers on ground should be aware of what fieldworker on ladder is doing at all times.</p> <p>Pully used to lift den box into tree should be checked prior to use to ensure in working condition and drop mechanism is working.</p>
Tree fall	Head or other injury	All people involved	Trees may be blown over, therefore, weather should be checked prior to visiting site. If high winds are forecast then work should not be undertaken.
Wet weather	Slip or fall	Fieldworkers working at height	Wet weather may make working conditions slippy, particularly when working at height. Therefore, if rain is forecast work should not be undertaken. Similarly, if conditions deteriorate during field work and the site becomes wet, work should cease to reduce risk of falls, slips or trips.
Forestry operations	Collision with vehicles, falling trees, stacked timber	All fieldworkers	<p>Don't climb on stacked timber, follow warning signs on site and if forestry operations evident then work should not be undertaken.</p> <p>Inform land owner prior to arriving on site to ensure no operations are taking place.</p>

Manual handling	At risk of injury and back pain from carrying den box.	All field workers	Den boxes weight approx.. 13kg. Therefore efforts should be made to
Lyme disease	Tick bites	All field workers	Keep skin covered. Check skin when leaving site for ticks. Carry a tick kit to remove ticks. Consider use of insect repellent.
Cuts	Cuts, grazes	All fieldworkers	A first aid kit should be carried at all times. It should contain plasters and antiseptic wipes.

I have read the above risk assessment and understand all that is contained within

Name	Signature	Date

Hospitals

Daisy Hill Hospital, 5 Hospital Road, Newry, BT35 8DR. 24 Hour Emergency Dept: +44(0)28 375 62090



Louth County Hospital, Dublin Road, Dundalk. Tel: 00 35342 93 34701 or 00 353 42 93 85400

