

Lotek



VHF Collars

USER MANUAL

REVISION 02
18 JUL 2019
#MVHF16

TABLE OF CONTENTS

- 1. INTRODUCTION3
 - 1.1. OUT OF THE BOX.....3
 - 1.1.1. TWO EASY STEPS3
 - 1.2. BEFORE DEPLOYMENT.....3
 - 1.2.1. ORDER SUMMARY.....4
 - 1.3. WHAT'S INCLUDED.....4
 - 1.4. OPERATING CONDITIONS.....4
 - 1.5. VHF RECEIVERS5
 - 1.6. VHF ANTENNAS5
- 2. TURNING THE VHF TRANSMITTER ON AND OFF.....6
 - 2.1. BEFORE YOU BEGIN6
 - 2.2. TO TURN THE VHF TRANSMITTER ON.....7
 - 2.2.1. WHAT CAN I DO IF I CAN'T PICK UP A SIGNAL?.....7
 - 2.3. TO TURN THE VHF TRANSMITTER OFF.....8
- 3. FITTING THE COLLAR9
 - 3.1. INTRODUCTION.....9
 - 3.2. POWER MANAGEMENT - BEHAVIOURS.....9
 - 3.3. FASTENERS.....10
 - 3.4. COLLAR ORIENTATION10
 - 3.5. BEFORE YOU BEGIN11
 - 3.6. TO FIT A COLLAR THAT HAS NYLOC NUTS AND BOLTS12
 - 3.7. TO FIT A COLLAR THAT HAS A NYLON NUT AND BOLT13
 - 3.8. TO FIT A COLLAR THAT HAS A BELT BUCKLE.....14
 - 3.9. TO FIT A CABLE-TIE COLLAR.....15
 - 3.10. REMOVING THE COLLAR16
 - TIME SINCE DEATH16
 - 3.10.1. TIME COLLAR-RELEASE MECHANISM.....16
 - 3.10.2. DISPOSAL.....16
 - 3.10.3. REPLACEMENTS.....16
- 4. PULSE RATES AND PATTERNS WHEN TRACKING17

4.1. NOMINAL PULSE RATE	17
4.2. OTHER PULSE RATES.....	17
4.3. VHF RECEIVERS AND ANTENNAS.....	18
4.4. BEHAVIOURS.....	18
4.5. MORTALITY PULSE RATE	18
4.5.1. MORTALITY MODES.....	19
4.5.2. LATCHING MORTALITY MODE.....	19
4.5.3. NON-LATCHING MORTALITY MODE.....	19
4.6. TIME SINCE DEATH.....	20
4.6.1. DECIPHERING THE CODE.....	20
4.6.2. TIME COLLAR-RELEASE MECHANISM.....	21
APPENDIX A: TESTING THE VHF TRANSMITTER'S RANGE.....	22
APPENDIX B: TIPS AND TROUBLESHOOTING.....	24

1. Introduction

Congratulations on your purchase of a new VHF collar from Lotek. We have taken the time to create this guide to get you up and running as quickly as possible. We trust you will experience many years of easy tracking with your Lotek VHF collars.

1.1. Out of the Box

When received from Lotek, the VHF collar's transmitter will be turned off to preserve the battery's charge. We recommend that you test the VHF transmitter within seven days of receiving it from Lotek.

1.1.1. Two Easy Steps

1. **Turn the VHF transmitter On and Off** (See 'Turning the VHF Transmitter On and Off' later in this guide)
2. **(Optional) Test the VHF's impressive range** (See Appendix A – 'Testing the VHF Transmitter's Range')

1.2. Before Deployment

Well before deploying your VHF collar, please read this user guide. If the VHF collar has been programmed with behaviours, it may have to be turned on hours or days before deployment. This is to ensure that the VHF transmitter broadcasts its signal at the required time each day.

For more information, see:

- Turning the VHF Transmitter On and Off later in this guide
- 'Pulse Rates & Patterns when Tracking' later in this guide; and
- The Order Summary form for the VHF collar you are to deploy

1.2.1. Order Summary

The order summary contains important information about the configuration of the collar's VHF Transmitter. This will include, where relevant, information about:

- Pulse rates
- Behaviours
- Mortality rate and mode
- Frequencies, and
- Calculated life.

This information may be required:

- Prior to fitting the collar to the animal, and
- When tracking the animal.

IMPORTANT: Ensure that the people who turn on and fit the collar, have access to a copy of the order summary.

1.3. What's Included

For a complete list of the items included in your order, refer to the packing slip that shipped with your order.

IMPORTANT: Magnets must not be attached to the VHF transmitter. For information on how the magnet is used to turn the collar on and off, see 'Turning the VHF Transmitter On & Off', later in this guide.

1.4. Operating Conditions

Operating temperature: -20° to 60° C (-4° to 140° F)

Storage: Store at room temperature (below 30° C) in a clean and dry area, away from heat sources and out of direct sunlight. Do not refrigerate nor freeze.

IMPORTANT: If storing a VHF collar for a long period of time, turn it on for 12 to 24 hours once every four months. This will exercise the battery and minimize passivation.

Water resistance: VHF collars are designed for terrestrial mammals. VHF collars are waterproof and have been tested in water to a depth of two metres for 24 hours.

Durability: VHF collars are designed for normal wear and tear. Normal wear and tear does not include, for example, being chewed excessively by animals, vehicle strike and electrocution.

Replacements: Because of the variance in operating conditions, Lotek recommends that VHF collars be replaced between 80 to 90 percent of their calculated life. For information about the VHF collar's calculated life, please refer to the order summary.

1.5. VHF Receivers

Lotek recommends using dedicated wildlife VHF receivers. Wideband receivers are not recommended.

1.6. VHF Antennas

Lotek recommends Yagi antennas. Three-element folding Yagi antennas can be purchased through Lotek.

NOTE: Ensure that your VHF receiver and VHF antenna operate in the same frequency band as the collar's VHF transmitter.

2. Turning the VHF Transmitter On and Off

The steps involved in turning a collar's VHF transmitter on and off may differ from other VHF transmitters.

IMPORTANT: Unlike some VHF transmitters, the magnet must not be attached to a VHF collar when not in use.

NOTE: Some Lotek VHF collars are fitted with a time collar-release mechanism. This mechanism is also turned on and off using a magnet. For more information, see the user manual that came with the time collar-release mechanism.

2.1. Before You Begin

Before turning a VHF collar on or off:

- Ensure that you have a magnet available
- Your VHF receiver is turned on and tuned to the VHF frequency, and
- If your VHF collar has been programmed with behaviours, refer to your order summary to determine what time, and if necessary, what day of the week, the VHF transmitter should be turned on.



2.2. To Turn the VHF Transmitter On

- Place a magnet on the dimple for one to two seconds.

NOTE: The dimple is a small concave depression and is located on the front surface (left) or underside of the battery holder.

Result: The VHF transmitter will broadcast a squeal, and then broadcast five fast pulses followed by regular pulses (nominal pulse rate).

NOTE: Signal drift can occur over time and because of seasonal temperature changes. You may have to fine-tune the frequency either side of the expected frequency.

2.2.1. What can I do if I can't pick up a signal?

If the VHF receiver could not pick up the VHF signal:

- Check the VHF receiver is programmed to the correct frequency
- Ensure the VHF transmitter, VHF receiver and antenna all operate in the same frequency band
- Adjust the VHF receiver's sensitivity (gain)
- Fine tune the VHF receiver's frequency 1 to 3 kHz either side of the listed frequency
- Check the VHF receiver's batteries and replace if necessary

For more information, see 'Tips & Troubleshooting', later in this guide. If the receiver's batteries are charged and you have tried another VHF receiver without success, please contact Lotek for assistance.

2.3. To Turn the VHF Transmitter Off

- Place a magnet on the dimple for one to two seconds.
Result: The VHF transmitter will broadcast a squeal, then cease transmission.

IMPORTANT: To preserve the battery's charge, ensure that the VHF collar is switched off when not in use and placed away from any magnetic fields. To avoid a VHF collar being turned on accidentally, take care not to place the transmitter unit on or near any magnet.

IMPORTANT: Do not store magnets and collars together. A VHF transmitter can be turned on or off if a magnet comes within 20 mm of the dimple. Other magnets may switch the VHF transmitter on and off from a greater distance.

It is important that the user knows (to within one-degree Longitude / Latitude) where the first location will be attempted, this is best set up in the schedule and the fix taken before deployment. The downloaded data can be processed later when you have access to the internet.

3. Fitting the Collar

3.1. Introduction

Once you have captured the animal, fitting the collar is a straightforward task. However, if your VHF collar has been programmed with behaviours to preserve the battery's charge, it is important that you understand the implications that behaviours can have on the success of your tracking efforts.

3.2. Power Management – Behaviours

Some VHF collars are programmed with behaviours. Behaviours determine:

- When the VHF transmitter broadcasts a particular pulse pattern, and/or
- The rate at which the pulse is broadcast at any particular time.

IMPORTANT: Behaviours are not calendar or time-zone based. Behaviours count down from the time the VHF transmitter is switched on.

If behaviours were specified at time of purchase, then prior to fitting the collar, you may have to turn the VHF transmitter on, hours or days in advance. For more information, refer to the order summary form that you received. The order summary will help you determine what time of day, and if relevant, what day of the week the VHF transmitter must be turned on.

IMPORTANT: For example, the VHF transmitter may have been programmed to transmit its nominal pulse rate for only 14 hours out of 24 – five days a week, and to broadcast nothing for the other 10 hours and the remaining days (two) each week. If you want to track during daylight hours on Monday to Friday, the transmitter must be turned on early in the morning, on the Monday prior to fitting the collar.

NOTE: If programmed with behaviours, turning a VHF transmitter off and on will reset its behaviours. If the VHF transmitter you are about to fit was turned on at the required time, e.g., a couple of days ago, turning it off and on now may

require you to delay the fitting for another time of day, or another day of the week.

The VHF transmitter is turned on in advance and it was set in the factory to latching mortality mode, gently shake the VHF transmitter periodically to avoid activation of the mortality timeout period.

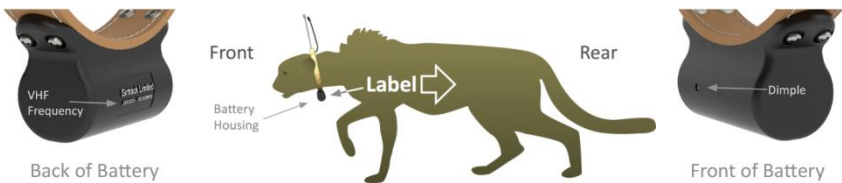
3.3. Fasteners

Depending on the size of the VHF transmitter that you are fitting, it may have any one of the following four fasteners:

- Nyloc nuts and bolts (Nyloc is a brand of steel nuts and bolts. The Nyloc nut has a nylon locking thread)
- Nylon nut, bolt
- Metal buckle
- Cable tie

3.4. Collar Orientation

For optimum performance of the VHF transmitter and to maximise durability of the VHF antenna, the battery housing (which also contains the VHF circuitry) must be oriented correctly when fitted.



IMPORTANT: When fitting the collar, orient the front of the battery housing to the front (anterior) of the animal. The dimple on some VHF transmitters is on the underside of the encased battery; ensure that the VHF frequency label faces the rear (posterior) of the animal.

3.5. Before You Begin

Before fitting the collar, ensure that:

- The VHF transmitter is on.
NOTE: To do this, turn on the VHF receiver and tune it to the VHF transmitter's frequency.
If the VHF transmitter was programmed with behaviours and turned on earlier, it may not be broadcasting any pulses at this time.
The VHF transmitter cannot be turned on after the animal has been released.
- You have the relevant fastening tool and a knife that can be used to trim off any excess collar without causing harm to yourself or the animal
- You have recorded the ideal receiving frequency; and
- The animal is adequately restrained and ready to receive the collar

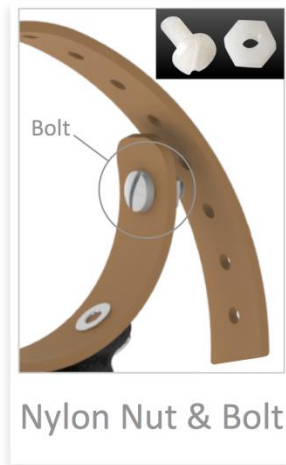
3.6. To Fit a Collar that has Nyloc Nuts and Bolts



1. **Undo the nuts and remove the cover plate**
A fastening tool is supplied by Lotek with each order
2. **Fit the collar around the animal's neck**
Ensure that the collar is oriented correctly. For more information, see the diagram (above).
If you need to punch a new set of holes in the strap, ensure they are not too close to existing holes or stitching.
3. **Place the cover plate and nuts back on the bolts and tighten**
Do not over tighten the nut
4. **(If relevant) Cut off any excess strap**
If the strap is too long for the animal, it may become a hindrance. As a guide, the length of strap in the photo (right) is sufficient.

The animal is ready to release.

3.7. To Fit a Collar that has a Nylon Nut and Bolt



1. Undo the nut

The nylon nut can be loosened with finger and thumb

2. Place the collar around the animal's neck

Ensure the collar is oriented correctly. For more information, see the diagram (previous page). If you need to punch a new set of holes in the strap, ensure they are not too close to existing holes or edges.

3. Place the nut back on the bolt and tighten

Hand tighten with finger and thumb

4. Crimp the excess thread

Use pliers to crimp / deform the thread. Deform the thread sufficiently to prevent the nut from loosening. Alternatively, a drop of Loctite 401 (supplied) will hold the nut in place

5. (If relevant) Cut off any excess strap

If the strap is too long for the animal, it may become a hindrance. As a guide, the length of strap in the photo (right) is sufficient. Do not cut the antenna. Cutting the antenna will reduce its performance.

The animal is ready to release.

3.8. To Fit a Collar that has a Belt Buckle



1. Undo the collar's buckle
2. Place the collar around the animal's neck
Ensure the collar is oriented correctly. For more information, see the diagram (previous page). If you need to punch a new hole in the strap, ensure they are not too close to existing holes or edges.
3. Do up the buckle, ensuring the strap is securely fastened
4. (If relevant) Cut off any excess strap
If the strap is too long for the animal, it may become a hindrance. When cutting, ensure sufficient length (at least two centimetres) of strap beyond the loop when tucked under. Do not cut the antenna. Cutting the antenna will reduce its performance.

The animal is ready to release.

3.9. To Fit a Cable-Tie Collar



IMPORTANT: The following information is intended for single-use transmitters. For re-useable transmitters such as LiteTrack 20, please follow the Quick Start Guide provided with the collar.

- 1. Place the collar around the animal's neck**

Ensure the collar is oriented correctly. For more information, see the diagram (previous page).

- 2. Thread the cable tie through the clasp**

Do not over-tighten. Cable ties only slide in one direction.

- 3. (If relevant) Cut off any excess strap**

If the strap is too long for the animal, it may become a hindrance. As a guide, the length of the strap in the photo (right) is sufficient. Do not cut the antenna. Cutting the antenna will reduce its performance.

The animal is ready to release.

3.10. Removing the Collar

Should and when you decide to remove the collar, keep in mind VHF collars are not designed to be refurbished. However, you can reuse VHF collars on another animal if they are in good working order and you expect the batteries to last. Lotek recommends that VHF collars be replaced between 80 to 90 percent of their calculated life.

Time Since Death

If the VHF transmitter is in mortality mode and broadcasting a time since death code, record the time since death before turning the VHF transmitter off. Failure to record the time since death before turning the transmitter off will result in the time since death information being permanently lost.

3.10.1. Time Collar-Release Mechanism

Some VHF collars are fitted with a time collar-release mechanism. After a programmed period of time, this mechanism will release the collar from the animal and the collar will fall to the ground. For more information, see the user guide that came with the time collar-release mechanism.

3.10.2. Disposal

Please dispose of your VHF collars in an environmentally friendly manner. VHF collars are not designed to be refurbished. The batteries cannot be replaced.

3.10.3. Replacements

Lotek VHF collars have been designed and engineered to the highest standards to optimise transmission range and battery charge at significantly reduced weights. Replacement collars from Lotek are the quickest, easiest and most reliable manner in which to continue any study. Please contact Lotek via our website, phone or email, and a telemetry consultant will be happy to assist with purchasing replacement collars.

4. Pulse Rates and Patterns when Tracking

4.1. Nominal Pulse Rate

The nominal pulse rate is the pulse pattern that was broadcast soon after the VHF transmitter was turned on. It is the pulse rate that is used to track the animal most of the time.

4.2. Other Pulse Rates

Depending on the features that were ordered, your VHF transmitter may at some stage broadcast:

- A slower than nominal pulse rate or no pulse at all, (this is to conserve the battery's charge - for more information, see 'Behaviours' below)
- A different pulse rate indicating that the host animal may be dead; or (For more information, see 'Mortality Pulse Rate' later in this topic)
- A different pulse pattern indicating how much time has elapsed since death (For more information, see 'Time Since Death' later in this topic)

IMPORTANT: The order summary form for each VHF collar contains information that will assist you in recognising and understanding the VHF transmitter's pulse rate and patterns. Ensure that you are familiar with the pulse rates and patterns that are programmed into the VHF transmitter you are tracking.

Pulse rates are expressed as pulses per minute (PPM).

4.3. VHF Receivers and Antennas

Refer to the user guides that came with your VHF receiver and antenna to ensure that you understand:

- How to optimise sensitivity (gain)
- The direction the antenna is polarised; and
- The implications of polarisation to tracking

4.4. Behaviours

Some VHF transmitters are programmed with behaviours. Behaviours can be used to conserve the battery's charge, for example, by transmitting a slower pulse rate (or no pulse) during daylight, e.g., when a nocturnal animal is safe in its burrow.

Behaviours determine:

- When the VHF transmitter broadcasts a particular pulse pattern; and
- The rate at which the pulse is broadcast

For example, your VHF transmitter may have been programmed to transmit its nominal pulse rate for 12 hours a day, five days each week (to conserve battery charge) and for the remaining time, broadcast nothing.

NOTE: Behaviours count down from the time the VHF transmitter is switched on.

4.5. Mortality Pulse Rate

Some VHF transmitters are fitted with a motion sensor and are programmed to broadcast a mortality pulse rate. The VHF transmitter will broadcast the mortality pulse rate when the host animal remains motionless for a specified period of time (mortality timeout period). This mortality timeout period is factory-set and cannot be changed.

4.5.1. Mortality Modes

If the mortality feature was ordered, it will have been set to one of two modes. These modes are:

- Latching Mortality Mode
- Non-Matching Mortality Mode

4.5.2. Latching Mortality Mode

If set to latching mortality mode and the mortality pulse rate is activated, the VHF transmitter will continue to broadcast its mortality pulse rate regardless of subsequent movement, e.g., after being dragged off by a predator or scavenger.

NOTE: To stop the mortality pulse pattern from being broadcast, retrieve the host animal and turn the VHF transmitter off. On turning the VHF transmitter on, the VHF transmitter's mortality feature will be reset and the VHF transmitter will begin broadcasting its nominal pulse pattern.

4.5.3. Non-Latching Mortality Mode

If set to non-latching mortality mode and the mortality pulse pattern is activated, the VHF transmitter will cease to broadcast its mortality pulse pattern when moved, e.g., after being dragged off by a predator or scavenger. For more information, refer to the VHF transmitter's order summary. The order summary will tell you the VHF transmitter's mortality timeout period, mortality pulse rate and the mortality mode it was programmed to use.

4.6. Time Since Death

Some VHF transmitters are programmed to broadcast a time-since-death code. The code identifies the amount of time that has elapsed since death.

Depending on factory settings, the amount of elapsed time is broadcast:

- As either hours or minutes; and
- At regular intervals for one minute (known as a data minute)

NOTE: When the elapsed time is not being broadcast, the mortality pulse rate is broadcast

Typically, the data minute is broadcast every ten minutes and the elapsed time is set to hours. For information on actual settings, see the order summary form for the VHF transmitter in question.

IMPORTANT: Functionality of TSD may differ depending on product-series selection. Contact Lotek for details.

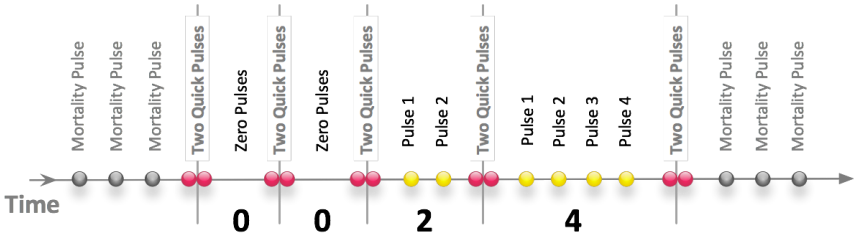
4.6.1. Deciphering the Code

At the start of the data minute:

- The mortality pulse rate will cease
- Two quick pulses will be broadcast
- Between zero and nine pulses will be broadcast
(The number of pulses indicates the first digit)
- Two quick pulses will be broadcast
- Between zero and nine pulses will be broadcast
(The number of pulses indicates the second digit)
- Two quick pulses will be broadcast
- Between zero and nine pulses will be broadcast
(The number of pulses indicates the third digit)
- Two quick pulses will be broadcast
- Between zero and nine pulses will be broadcast
(The number of pulses indicates the fourth (last) digit)

- Two quick pulses will be broadcast

Example: Let's assume that the VHF transmitter has been set to record the time since death in hours. The following diagram shows the pulses immediately before, during and after a data minute.



If the number of pulses between the pairs of quick pulses is zero, zero, two and four, then the number of hours that have elapsed since death is 24.

NOTE: Please record the time of death as soon as it is known. This information is lost as soon as the VHF transmitter is turned off

4.6.2. Time Collar-Release Mechanism

If the VHF transmitter is fitted with a time collar-release mechanism, and the collar has been released from the animal, the number of hours being broadcast from the VHF transmitter will be the number of hours since the collar dropped to the ground. This assumes that the collar has remained undisturbed since dropping to the ground.

APPENDIX A: Testing the VHF Transmitter's Range

A VHF transmitter's range will vary depending on a combination of factors. These factors may include, but are not limited to:

- The type and brand of VHF receiver and antenna
- The animal's mass and orientation
- Vegetation and terrain
- Background environmental noise
- Elevation
- Weather conditions

VHF collars perform optimally when fitted to an animal. Testing can be performed outdoors with a bottle of fresh water (not saline solution) to simulate the mass of the animal's neck.

Wrapping the bottle with some fabric (e.g. towelling) or fur, to simulate the animal's fur, enhances the reliability of the test. Alternatively, you can test the collar on a domesticated animal, e.g., pet dog or animal that is unlikely to run away.

Before You Begin

Before testing a VHF transmitter's range, ensure that you:

- Have a plastic water bottle with a circumference that approximates the circumference of the animal's neck
- The bottle is filled with fresh water (not saline solution), and wrapped in
- A piece of towelling or fur of sufficient length to wrap around the bottle.
- Have identified a location suitable for testing, and
- The VHF receiver and VHF transmitter have been turned on and the receiver, transmitter and antenna are all in working order.

To Test a VHF Transmitter's Range

1. **Place the collar around a suitably sized and wrapped bottle of fresh water**

Match the circumference of the bottle to the circumference of the animal's neck. A plastic bottle (e.g. soft-drink bottle) wrapped in a single layer of cotton towelling may provide an approximate simulation of the mass of the animal's neck.

2. **Position the bottle at the relevant height above ground**

This is the typical height of the transmitter from the ground when fitted to the animal. Orient the angle of the bottle to match the angle of the animal's neck.

3. **Move at least 500m away with the VHF receiver and antenna**

If driving a car, turn the engine off before attempting to pick up the signal. The car itself, may also affect reception.

NOTE: If you are testing the VHF transmitter on an animal, e.g., a pet dog, the orientation of the collar may be changing constantly. Vary the orientation of the antenna (vertical/horizontal) to maximise reception.

4. **Record the distances where the signal can no longer be detected.**

You may want to repeat Steps 5 and 6 to account for a range of factors, e.g., changes in line-of-site, terrain and weather.

What's Next?

When you are finished testing the VHF transmitter's range, ensure it is turned off.

APPENDIX B: Tips and Troubleshooting

Most problems can be solved quickly and easily by following the tips below.

Problem

I know the VHF transmitter is within range and it should be broadcasting its signal, but I can't detect it.

Possible Scenario

Solution

The VHF receiver is tuned precisely to the VHF transmitter's frequency.

(When the transmitter and receiver are set to exactly the same frequency, the signal will not be detected because they are in phase)

Offset the VHF receiver's frequency by at least 1 kHz, either side of the transmitter's frequency until you detect the VHF transmitter's signal.

The receiver and/or antenna operate in a different band to the transmitter.

Use a receiver and antenna that operate in the same band as the transmitter.

The VHF transmitter is not turned on.

(Before fitting the collar, the VHF receiver should have been used to verify that the VHF transmitter is on)

If already released, capture the animal and turn the transmitter on.

For more information, see 'Turning a VHF Transmitter On & Off' and 'Fitting the Collar' earlier in this guide.

Because of the VHF transmitter's behaviour, it is not currently broadcasting a signal.

The VHF transmitter may have been turned on when fitted to the animal instead of being turned on at the required time of day and/or day of the week prior to the fitting.

(Some VHF transmitters are programmed with behaviours to broadcast their signals for set periods of time every 24 hours and/or set days every seven days)

Determine if the VHF transmitter was programmed with behaviours and if so, determine when the VHF transmitter was turned on. If relevant consider the following:

- Capture the animal
- Retrieve the collar
- Turn the collar on at the correct time and if relevant, on the correct day.
- Capture the animal and fit the collar.

(For more information, see 'Fitting the Collar' earlier in guide and your order summary)

The animal or VHF transmitter you are tracking is not the animal or VHF transmitter that you think you are tracking.

If you deployed a number of VHF transmitters, try tuning the VHF receiver to some of the other VHF transmitters known frequencies.

The VHF transmitter's battery charge is depleted because:

- Of environmental conditions e.g. temperature extremes; or
- The VHF transmitter was not replaced after reaching 80% of its calculated life.

Use local knowledge of the terrain and your knowledge of the animal's behaviour to predict where the animal might be.

The antenna is not connected to the VHF receiver.

Check the antenna connection and the condition of the antenna cable.

The VHF transmitter, along with its host may have been removed from its habitat or destroyed. For example, its host may have been eaten by a predator, succumbed to the forces of nature, e.g. swept away in a flood or removed by a hunter.

Problem

The VHF transmitter's signal is weak and difficult to pick up.

Possible Scenario

Solution

The VHF receiver is tuned to a different frequency.

Check that the VHF receiver is tuned to the frequency of the CHF transmitter you are tracking.

Signal drift is occurred.

It is common for a VHF transmitter's frequency to change slightly over time because of changes in temperature.

(VHF transmitter crystals used by Lotek are pre-aged to minimise signal drift)

Tune the VHF receiver either side of the VHF transmitter's frequency until a signal is picked up.

A wideband VHF receiver or modified scanning receiver is being used.

Use a dedicated wildlife VHF receiver.
(Dedicated wildlife receivers operate within a narrower bandwidth to increase the signal-to-noise ratio. This improves the reception of weaker signals)

The VHF signal is obscured because:

- Of rain, snow or fog
- The animal is on the move through wet vegetation
- The animal entered a gully, crossed over a ridge or moved behind a large rock outcrop

Use your local knowledge of the terrain and your knowledge of the animal's behaviour to predict where the animal might be.

Stand on the deck or roof of a truck to cover a greater range.

Try to obtain a direct line of site, or climb to an elevated location, e.g. hill top or use triangulation.

There is too much noise around to hear the VHF signal.

Use headphones with your VHF receiver.

Lightweight headphones may be adequate. If tracking in high noise areas, e.g. near aircraft or waterfalls, use fully enclosed quality headphones.

Danger: When wearing headphones, stay alert for approaching predators.

Problem

The direction of the VHF signal is hard to determine.

Possible Scenario

Solution

The VHF signal is bouncing off the local terrain, e.g. mountain walls, rock outcrops or a tree

The transmitter may be pointing in the direction from which it received the signal, e.g. the mountain wall, rock outcrop or tree.

Climb to the nearest ridge to pick up a clearer signal or take several readings from different positions and use triangulation to pin point the location of the animal.

You may be getting closer to the VHF transmitter.

Reduce the VHF's receiver's sensitivity until it is just audible.

The transmitter's signal is coming from all directions. This is known as swamping and means that you are very close to the VHF transmitter.

Detach the antenna from the VHF receiver, and increase the VHF receiver's sensitivity (gain). Some receivers also come with an attenuator that you can use.

Problem

I don't recognise the VHF signal.

Possible Scenario

The animal has died and the VHF transmitter is transmitting the mortality signal or the amount of elapsed time since death.

Solution

Locate the animal and retrieve the VHF transmitter for future use.

Remember to determine the time of death before turning the VHF transmitter off. For more information see 'Pulse Patterns when Tracking' earlier in this user guide.

Someone else has fitted a collar to another animal and it's this other collar's pulse pattern that you are picking up on your VHF receiver.

Problem

The VHF transmitter was fitted with a time collar-release mechanism that should have worked by now.

Possible Scenario

If there is no signal, the collar may have been released into a cave, crevice or river that is blocking the signal.

If the VHF transmitter's signal is weak but still on the move, it may have been released into a river or swallowed (along with the animal) by a larger predator.

Solution