

Ruahine Whio Management Plan 2015-2020 – Current Management

CONTEXT OF THE RUAHINES IN THE WHIO RECOVERY PLAN

A national recovery plan guides the Department of Conservation (DOC) and interest groups involved in conserving Whio.

- The first priority of the recovery plan is to secure populations to achieve a minimum of 400 pairs at eight 'Security Sites' located throughout New Zealand by 2014. *Has this been achieved??*
- The second priority of the recovery plan is to recover / re-establish Whio populations throughout their former range ('Recovery Sites').

Originally, the aim was to protect an additional 100 pairs across the country - this has been changed to 100 additional pairs protected in each main island (i.e. an additional 200 pairs) following an increase in community efforts across New Zealand.

The Ruahines Ranges are considered one Recovery Site, and the trapping networks that exist are protecting different parts of the same population.

CURRENT MANAGEMENT WITHIN THE RUAHINES

Seven sites currently experience some form of predator control via trap networks established to benefit Whio. It is estimated about 30 pairs are protected across these sites, although this is likely to be a conservative estimate.

The seven sites are (from north to south);

1. Te Potae
2. Aorangi/Awarua
3. River Valley
4. Apias
5. Upper Makaroro
6. Oroua
7. Pohangina

Northern Ruahine - Te Potae, Aorangi/Awarua, River Valley and Apias

Te Potae was originally established in 2007 as a research site to determine if DOC 200 traps needed to be baited to be effective, and continued to grow after the trial was completed. The project area spans both public conservation land and Aorangi-Awarua Trust land. In 2012 Nga Whenua Rahui provided funding to the Aorangi-Awarua Trust to start maintaining the trap lines in the northern part of the project. Many of the Te Potae o Awarua traps fall within the Northern Ruahine Ecological Management Unit, which is a priority site for the Department. The proposed management action for this site is three-yearly 1080, which will have significant benefits for Whio if implemented. In a dog survey undertaken in 2009, 18 pairs were detected within the area, 12 of which are within the protected area (Robson 2009). This site remains a stronghold for Whio, despite declines in numbers elsewhere. This site also protects kiwi.

Neighbouring Te Potae is River Valley Ventures, which now includes protection of Whio as one of the activities that the company supports. A number of traps have been positioned at accessible

points on the Rangitikei River above and below the River Valley Lodge. This site protects an estimated two or three pairs.

The Apias site was established in 2010 by the Department of Conservation to protect the declining Whio population at this site, and add to the Te Potae O Awarua network, and was originally named 'Manu Tiaki'. This is currently run predominantly by volunteers based in Wellington. The project area spans both public conservation land and two Maori Trusts' land and encompasses the Apias and part of the Ikawatea catchment. This site protects at least 5 pairs, probably more, along with the last remaining kiwi population in the Ruahines.

Southern Ruahine – Oroua and Pohangina

Established in 2008 by the Manawatu Deerstalkers Association (who had volunteered at Te Potae), the project covers public conservation land and a small area of private land in the upper Oroua catchment. The trap lines follow the mainstem of the Oroua River, and encompasses several tributary catchments located to the south of the river. In 2011, a volunteer coordinator was appointed for the project (as a volunteer) and a core of approximately 30 volunteers maintains the traps. The site protects at least 5 pairs, probably more and provides an easily accessible opportunity to engage with the local communities, including schools, new volunteers, training, and ko hanga reo.

Over time those involved in Oroua extended their efforts to include the Pohangina catchment, where there are currently about 100 A24 traps. There is an additional 5 pairs minimum protected here.

Site	# of traps	Km river protected	# pairs protected
Te Potae o Awarua	620	35	12
River Valley	150	5	3
Apias	387	40	5 (min)
Upper Makaroro	116	10	?
Oroua	520	10	5 (min)
Pohangina	100	10	5 (min)
Total	1893	110	30

THE GOALS FOR WHIO IN THE RUAHINES

The long-term goals for Whio in the Ruahines are:

1. Whio are present, secure and productive on all suitable waterways within the Ruahine range.
2. The Manawatu, Rangitikei and Hawke's Bay communities strongly identify with conservation values in the Ruahine Range particularly in their support for the Whio population.

Within the next five years, the aim is to have 50 breeding pairs protected within the Recovery Site, supported by a well-coordinated volunteer network sourced by Manawatu, Rangitikei, Hawkes Bay and other communities.

The attainment of the above goals will require a number of topics to be considered during the five year life of this plan. They are:

Topic 1: Maintenance

Topic 2: Survey and Monitoring

Topic 3: Growth

Topic 4: Advocacy and Engagement

Topic 5: Ruahine Whio Network

IMPLEMENTATION

Topic 1 – Maintenance

Trap network design

Controlling stoats to low levels through trapping has been shown to increase productivity of Whio populations, resulting in higher female survival while on the nest, higher nesting success and increased fledgling rates. There are various trapping regimes that have resulted in measurable success, and the trap network design that has resulted in the most confidence within the North Island is either a grid of trap lines 1-2km apart (landscape scale trapping), or a trap line down the main stem of the river and a line 1km on either side of this (tramline), using double-sets DOC200s. As a minimum, it is recommended that at least two lines of traps are established on either side of the river with traps at 100m spacing.

Within the Ruahines most of the traplines are spaced more than 1km apart (in some cases up to 4 km apart). This is has been justified by taking in to consideration the terrain and altitude probably supporting fewer stoats with larger home ranges. Therefore a smaller number of traps may be just as effective in the Ruahines.

Trap type

In 2012, a paired trial between single-set and double-set DOC200 traps in the Te Urewera showed significantly more stoats were caught in double-set traps. Of the 58 stoats caught in the trial, 51 were caught in a double-set trap. Of these, 70% of stoats were caught in a trap with a rat, which may have attracted the stoat as fresh bait (D. Baigent, unpublished data, 2012). Therefore more and more trap networks are replacing single-sets with double-sets during routine maintenance. In the Ruahines most of the traps are transported and placed through volunteers carrying traps, and in those areas double-sets are not feasible. However, where accessible, DOC200 double-sets are likely to increase the number of stoats caught.

A24 self-resetting traps have recently undergone trials in the field, with limited success for stoats. This has predominantly been attributed to the failure of any trialled long-life stoat lure to still attract an animal after a few weeks. The current recommendation is that they could still be a good investment if they are checked as regularly as a DOC200, and may kill more stoats through the self-resetting mechanism. However, this has not yet been tested and implementation will be carefully considered.

Timing and frequency of checks

There are a number of stages where Whio, especially females and ducklings, are particularly vulnerable to predation. These are:

- Female on the nest – August to November (1st clutch), can go through to January (2nd clutch)
- Ducklings Stage 1-3: October-February, to include any 2nd clutch ducklings
- Moulting: December to May, where adults are flightless for two weeks

Therefore timing of trap checks are important. Most of the highly successful trapping regimes are undertaken all year round. As examples, Tongariro Forest and Manganui-o-te-Ao/Retaruke undertake 18 checks a year (twice-monthly Sep to Feb) and Mt. Taranaki 15 checks (twice monthly Dec to Feb). Even with fewer checks, Mt. Taranaki has increased productivity, although not at the rate shown at the other two sites. The trade-off is therefore between effort and rate of recovery. Every dead stoat will help; the more that is done the faster the population will recover. As a minimum, it is recommended that trapping start no later than September and finish no earlier than March (i.e. 7 checks). A month on either side of these would be useful to protect the earlier breeders and those that moult later, but of lower priority.

We know that often stoat peak abundance occurs from December through to February (i.e. heightened risk from stoats due to juveniles dispersing), so consideration will be given to undertake an extra trap check in December and January (and if possible, February) to correspond with peak stoat abundance (i.e. 9-10 checks).

Trap audits

The importance of ongoing trap tests is becoming increasingly apparent. For example, after five years Tongariro Forest found that a third of their traps would not have caught a stoat even if it had encountered one (A. Beath pers. comm., 2015). They have since implemented ongoing trap maintenance and auditing to ensure that the trap network was functioning at its best. Similarly, Moehau Kiwi Sanctuary found that 41% of their traps would not have caught a stoat after they audited their trap network, which has resulted in annual trap checks with 100g weights (S. Bolton, pers comm., 2015). Appendix 2 outlines check and maintenance guidelines for Whio trap networks.

Aerial 1080

At a number of sites where trapping and aerial 1080 have occurred, it is clear that the addition of frequent use of 1080 (i.e. every 3 years) can increase the rate of recovery, and in some cases is essential for halting the decline. As example, preliminary modeling showed that annual growth rate for Tongariro Forest increased from 3% (trapping only), to 6% with trapping and 1080. In the top of the South Island, Wangapeka/Fyfe Security Site had a decline of 6% with trapping only, but with 1080 increased to holding steady at 0% growth (Scrimgeour, 2015). Aerial 1080 on its own is unlikely to recover Whio populations, since female mortality in the interim years is unlikely to be matched by recruitment from one successful year in every three. The risk that flood events may also occur during a 1080 season further increases the risk. However, the value of increasing the use of 1080 in Ruahine Ranges is recognized, which may occur as part of the Department's Ecological Management Unit framework for the Ruahines if the site ranks high enough.

Objective
Predator control across all sites is effective at protecting Whio and resulting in population growth.

Issues

- Te Potae O Awarua require helicopter flights to maintain, which is costly and limits the frequency of traps checks that can be undertaken
- Volunteers undertake the majority of the trap checks, and therefore frequency and timing is limited by availability (mostly weekends)
- DOC is accountable for any person (volunteer or paid) undertaking conservation work on public conservation land. New Health and Safety reforms may restrict how volunteer groups operated within the Ranges
- The nature of the terrain limits the potential volunteer pool to only include people who are fit enough to undertake the work
- Improving existing trap networks is not as attractive as putting traps at new sites
- There is still some uncertainty about the effectiveness of A24 self-resetting traps due to the lack of a long-life stoat lure (unless checked as frequently as DOC200s)
- There is no aerial 1080 programme in place to increase the rate of Whio recovery alongside the trapping networks

#	Action	When	Priority	Who
1.1	Maintain the current trap network throughout the Ruahine Ranges.	Ongoing	Essential	All
1.2	Review the sustainability of the current trap network throughout the Ruahine Ranges at the end of the 2015 season.	2016	High	Collective
1.3	Increase trap checks to at least 7 times a year during the breeding season. The more checks the better.	2015 onwards	High	Each group
1.4	When replacing traps, replace single-set traps with double-sets where access and resources allows.	2015 onwards	High	Each group
1.5	Review the trap network to highlight any traps that have not caught anything in the last two years.	2015	High	Each group
1.6	Test the traps identified in 1.5 as a first priority following guidelines in Appendix 2.	2015	High	Each group
1.7	Undertake a trap audit every year to ensure that all traps are operating effectively.	2016 onwards	High	Each group
1.8	Develop a brief operational plan for each of the sites identifying approaches, local goals, resource requirements, key contacts and obligations to funders (Appendix 1 template). Collate this is to one operational plan.	2016	Medium	Each group
1.9	Support the use of aerial 1080 where possible to ensure additional protection for Whio across the Range.	Ongoing	Medium	All

1.10	Investigate gaining access through Managohane which would provide walking access to some of the lines.	Ongoing	Medium	DOC/Aorangi Awarua Trust
1.11	Manage all sites consistently . . .			

Topic 2 - Survey and Monitoring

As mentioned above, there are a number of trapping designs that have been proven to be successful in the recovery of Whio. These sites usually follow a 100m spacing between double-set DOC200 traps and mostly maintain 1 km spacing between lines, with a frequency of trap checks between 15 to 18 per year. Within the Ruahines the number of traps and checks is influenced by a number of factors, including difficulty of access, volunteer availability and stoat density possibly being less due to steep terrain and high altitude. It is clear that a 'one rule fits all' approach is not necessarily the most effective, and there needs to be some element of flexibility to ensure that a trap network is cost-effective while achieving the desired conservation outcomes. A reduced trapping regime may well be successful in the recovery of Whio in the Ruahines, but it has not been 'tested'. Therefore monitoring the outcome is essential to ensure that the chosen management regime is delivering on the desired outcomes and to allow improvement.

Undertaking surveys to understand the distribution of Whio in unprotected areas is of lower priority, as resources may be better used investing in protection. However, obtaining opportunistic records (e.g. from hunters, hut books, trampers) is important to improve our understanding of where there are still Whio present outside of the management units. This information may help direct where future growth might have the most value.

Objective
There is a clear understanding of the scale and success of the predator control initiatives within the Ruahine Ranges.
There is an improved understanding of Whio distribution and abundance within the Ruahine Ranges.

Issues

- Trap network design does not match 'best practice' and therefore the efficacy of the traps is not understood as well as at other sites
- The population size, distribution and productivity of Whio at the trapped sites is poorly understood
- Monitoring is expensive and time-consuming
- Data collation after trap checking adds more to the volunteer workload, but can offer opportunities for volunteers who cannot get in the field to assist with the programme
- There is a lot of data sitting with different people/groups and it is difficult to know what has been entered in to Whio Manager

#	Action	When	Priority	Who
2.1	Undertake a dog survey of all rivers with predator control to determine the number of pairs currently protected.	By 2016	Essential	DOC/ Collective

2.2	Repeat the dog survey every 5 years (staggering each site per year as an option) to determine the efficacy of trapping.	Every 5 years	Essential	DOC/Collective
2.3	Enter all casual observation data in to Whio Manager after every trap check.	Ongoing	High	Each group
2.4	Collate all casual observation data from hut books as opportunity allows.	Ongoing	Medium	DOC/Collective
2.5	Write an annual report collating Whio records from all sites and comparing to previous years.	Annually	Medium	DOC

Topic 3 – Growth

There is currently an estimated 30 pairs protected by the trapping network in place, and over the next 10 years the goal is to grow this to 50 pairs spread across the Ruahine Ranges. A typical Whio territory size is estimated to be approximately 1 km in length. Therefore, to obtain the ability to protect 50 pairs or more, an estimated 50 km of river needs to be adequately protected between the sites. Assuming there is adequate habitat available, this has already been achieved.

Maintaining the current network is the first priority, and growth will only be considered if there is confidence that it is sustainable.

If growing the trapping network is explored, the following principles will be considered to think strategically about growth:

- Health and safety of trappers – difficult and dangerous terrain should be avoided.
- Links are important – identify where new sites can provide stepping stones and or support existing trapping networks to create a few large areas of protection rather than many small ones.
- Presence and abundance of Whio. Large number of pairs should be prioritised over small populations as these populations will recover faster and be more resilient against stochastic events.
- Minimise further loss to current distribution. Consideration should be given to distribution of new sites that may prevent further reduction in range of Whio within the Ruahines
- Access. Access for volunteers is an important consideration. Sites that can be accessed within 1.5 days from the car should be priority.
- Cost. Priority will be given to sites where there is a large return on an investment. Therefore sites that do not require any flying will be of higher priority than sites that are costly to maintain.
- Sustainability. Sites which provide synergies with other groups will have a higher chance of long-term sustainability. As an example, sites that fall within high-ranking EMUs have a higher chance of obtaining ongoing management from the Department.
- Advocacy and engagement of new stakeholders.

Objective
A total of 50 pairs are protected in the Ruahine Recovery Site by 2020

Issues

- Maintaining the trapping network that is currently in place is difficult enough.
- Resources (money, volunteers etc.) may be hard to obtain to facilitate growth.
- Access in to the ranges prohibits where traps can be placed and easily maintained.
- Annual rainfall is high and can result in frequent flood events. This may limit Whio recovery within the ranges.

#	Action	When	Priority	Who
3.1	Engage tangata whenua in planning new sites for growth.	Ongoing	Essential	All
3.2	Develop criteria for what is considered sustainable to manage.	2015	High	Collective
3.3	Map all sites within a day's walk from a carpark as a first consideration, and sites that can be done in a long-weekend as a second consideration for growth. Assess the values of these areas for Whio.	2015	Medium	Collective
3.4	Assess potential growth opportunities based on 3.2, 3.3 and the growth principles. Summarise these opportunities for future reference.	2016	High	Collective
3.5	Share any plans for growth with the other groups to ensure that any synergies/support are identified	Ongoing	High	All

Topic 4 – Advocacy and Engagement

The second objective of this plan is that the Manawatu, Rangitikei and Hawke's Bay communities strongly identify with conservation values in the Ruahine Range particularly in their support for the Whio population. There are two main ways to achieve this:

1. through involving people in volunteering with Whio work and
2. through education and advocacy

The backbone of Ruahine Whio conservation is the volunteers that devote their time to undertaking trap checks and reporting sightings. Maintaining and growing an effective volunteer network can be challenging, especially given the difficult nature of the terrain. Volunteer growth has to be deliberately slow to allow for proper vetting of new volunteers and their capacity to undertake the work – quantity over quality.

Ensuring that New Zealanders understand the threats to Whio and what they can do to help is the key to providing ongoing support for not only the Ruahine Whio population, but Whio across the country. The Ruahines are located near Palmerston North, and attract visitors from Wellington and Hawkes Bay as well. Therefore opportunities abound to introduce locals and visitors alike to Whio.

Objective
An effective volunteer network is in existence to safely be able to undertake necessary Whio protection with the Ruahine Ranges.

The community as a whole is aware and supportive of the Whio management programme and regularly given opportunities to either participate and/or learn about Whio, water quality and biodiversity in the Ruahine Ranges.

Issues

- Most volunteer effort is required for undertaking trapping rather than recruitment, therefore growing volunteer effort occurs opportunistically
- The work is intensive, which limits the number of volunteers that are capable of undertaking the work
- For some site (e.g. Apias and Upper Makaroro), volunteers are usually only available on weekends, which reduces the weather windows available
- Some traps can only be checked over long-weekends, and therefore the timing and frequency of trap checks are planned around these
- DOC is accountable for any person (volunteer or paid) undertaking conservation work on public conservation land. New Health and Safety reforms may restrict how volunteer groups operated within the Ranges

#	Action	When	Priority	Who
4.1	Create opportunities for conservation volunteers from the Manawatu, Rangitikei, Hawke's Bay and Wellington regions to engage with Whio protection in the Ruahines.	Ongoing	High	All
4.2	Engage tangata whenua as potential volunteers in the Ruahine Ranges	Ongoing	High	All
4.3	Continue to recruit volunteers through the DOC website	Ongoing	Medium	DOC
4.4	Interchange volunteers between sites to increase their experience and range.	Ongoing	Medium	All
4.5	Health and safety of volunteers remains the highest priority – create a H&S plan for Ruahine volunteers???	2015	Essential	DOC
4.6	Create opportunities for educational engagement with conservation by participants in youth justice programmes and school based programmes	Ongoing	High	All
4.7	Inform, update and seek to involve key funders (Horizons, DOC, CNIBDT, WIA, other sponsors)	Ongoing	High	Ruahine Whio Protection Trust
4.8	Develop and maintain a website for the Ruahine Whio Protection Collective	Ongoing	High	Ruahine Whio protection trust
4.9	Explore opportunities for university students to use the Ruahines as a study site, particularly around trap efficacy and/or Whio protection	Ongoing	Medium	All

4.10	Create an quarterly newsletter with contributions from all sites to send out to volunteers and other community contacts	Ongoing	Medium	All contribute/ DOC formats and distributes
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Topic 5 – Ruahine Whio Protectors Collective

The current trapping infrastructure has been implemented and grown relatively independent of each other. There are a lot of efficiencies to be gained by coordinating efforts between the sites, and treating the whole Ruahine Ranges as a Recovery Site rather than small parts of it.

It is proposed that a representative from all the groups forms a collective, who will meet twice a year to report on progress, issues and opportunities. The collective will be best suited to discuss and agree on funding priorities for the Ruahine Ranges, which can be passed through to the Ruahine Whio Protection Trust who will raise funds on behalf of all sites as prioritized. DOC will remain in its support role to the Trust, the Collective and to each individual site as needed.

Objective
All Whio protection sites within the Ruahines work collectively towards the recovery of Whio throughout the Ruahine Ranges

Issues

- The sites have been working independently from each other for a long time. It might be difficult to change this.
- There is a need for strong leadership to pull everyone together, but there are no resources available to support this
- Currently information, resources and opportunities are not frequently shared between groups which minimizes synergies that can be obtained.

#	Action	When	Priority	Who
5.1	Develop the Ruahine Whio Protectors Collective to connect the current sites and provide opportunities to think collectively about future management of Ruahine Whio.	By 2015	Essential	All
5.2	Clarify the accountabilities and responsibilities of all involved and formalise it in to a written agreement.	By 2015	Essential	Collective
5.3	The Collective to meet once or twice (depending on need) annually to provide updates on progress made at each site, discuss and resolve issues and highlight funding needs.	Annually	High	DOC
5.4	Raise funds in line with criteria developed for sustainable projects.	Ongoing	High	Ruahine Whio Protection Trust/

				Collective
5.5	DOC maintain a support role in Partnerships to specifically work with the Whio protection and be the one point of contact in DOC, help with organizing meetings, data management, volunteers etc.	2015	Essential	DOC
5.6	Communicate potential opportunities between sites which may provide synergies e.g. DOC to communicate any helicopter trips in to the Ruahines so that groups have the opportunity to 'piggy back' where feasible.	Ongoing	High	
5.7	Use the Whio Manager application so that all sites has access to each other's data.	Ongoing	High	
5.8	Coordinate the collation of knowledge and data into a single depository and prepare a summary of current state.	2016	Medium	

ACKNOWLEDGEMENTS

REFERENCES

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APPENDICES

Appendix 1: Whio Operational Plan template

WHIO OPERATION PLANS

Operational Plans do not need to be large and supporting information can be provided in appendices, or by references.

Budget: Indicative maintenance budgets should be developed to reflect the management of the monitoring and pest control at different phases of establishment. Ramp-up costs can be budgeted, although these operations and funding will be approved on an annual basis subject to priority defined by result monitoring.

Plan duration: Plans should desirably be of 5 year duration. This allows for advance establishment planning. Year 1 targets and budget are expected to be based upon establishment and maintenance commitments. Targets and proposed resource allocations for 4-5 years out are indicative only.

Plan revision: Plans are to be reviewed and amended annually at the end of each season (business year) in July/August. Plans shall be re-written at the end of their 5-year lifespan, or sooner if the establishment or maintenance programmes have been substantially altered.

WHIO OPERATION PLAN TEMPLATE

INTRODUCTION

Background

- History
- Start date
- Land tenure

Operational Area (use shape files)

- Rivers
- Hectares
- Shape file and jpeg

Other benefit species/ecosystems

- Kiwi, Kokako, wetlands

Existing management

- e.g. 1080, trapping, ONE

GOALS/OBJECTIVES OF THE PLAN

- Goal for Recovery Sites: x pairs within 10 years,
- Objective for Recovery Sites: x pairs within 5 years

PREDATOR CONTROL

Strategy – Best Practice or describe approved alternative

Methods: Specify Operational Targets (if applicable)

- Stoat Control
 - e.g. Landscape, single line, tramlines
 - e.g. 750 DOC 200 double sets at 200metres, checked monthly

e.g. Tunnel type

- Map of traps (jpeg and shape file)
- Rat Control (if applicable)
e.g. bait stations, cholicalciferol bags – 100metre grids
 - Map of bait stations (jpeg and shape file)
- Possum Control (if applicable)

MONITORING AND TARGETS

ENVIRONMENTAL MONITORING

e.g. Climate monitoring (rainfall, riverflow, grid references)

PREDATOR MONITORING (if applicable)

Result monitoring methodologies

- Mustelids
e.g. 10 lines of 10 tracking tunnels (Map-jpeg & shape)
- Rodents
- Possums

OUTCOME MONITORING

By methodology

- Annual walk through survey-recording x pairs in x kms (minimum requirement as per best practice)
- Dog survey every x years
- Specify other outcome measurements
 - Map (jpeg & shape)

OTHER WHIO MANAGEMENT

Eg ONE, Wild to Wild, Captive to Wild, Wild to Captive

RESEARCH

e.g. tailmount trials, video surveillance, site inventory, juvenile dispersal.

ADMINISTRATION

Contacts and Roles

e.g.

Contact Name	Role

Information management and reporting

Report/data name	Contact

Infrastructure Requirements

e.g. tracks, huts, vehicles

Community Relations and Advocacy

e.g. Link to Community Relations Plan

Health and Safety

BUDGETS (indicative)

Annual/Long-term

ACKNOWLEDGMENTS

REFERENCES

Published and unpublished reports

APPENDICIES

Additional Maps/Tables

Financial tables

Appendix 2: Trap network auditing criteria

	Performance Standard	Evidence
1.	Trap is set correctly	<ul style="list-style-type: none"> a) Correct bait for the current month is positioned in the holder. b) Trigger plate is angled approximately horizontal and as close to the baffle as possible. c) All trap plates move freely when the trap is set (springs are tensioned in a set position) d) The trap box is marked correctly with the trap number.
2.	Trap is secured correctly	<ul style="list-style-type: none"> a) Trap is secure in within the tunnel and correctly positioned. b) All mesh is securely fixed to the trap box with no gaps other than the opening aperture which shall measure no greater than fifty millimetres square. c) Internal baffle is in line with the trigger plate d) Tunnel lid is secured firmly
3.	Trap functions correctly	<ul style="list-style-type: none"> a) The trap can be sprung by gently lowering a 100 gram weight onto the distal end (end furthest from the hinge) of the trigger plate. b) When it sets off the moving parts do not touch any part of the tunnel or baffles c) Double set traps do not spring off 'sympathetically' i.e. when one trap is sprung by a dummy capture (e.g. rolled newspaper ~40mm diameter) the other trap remains set. d) All moving parts on non-stainless steel traps are lubricated with builder's pencil or graphite powder so that they move freely without binding when the trap is actuated.
4.	Trap is sited correctly	<ul style="list-style-type: none"> a) The trap box is positioned in such a way that it is unlikely to be damaged or accidentally sprung by stock and where located on visitor walking tracks is not obstructing passage. b) The trap box is seated firmly on the ground so that it is stable and does not move in any direction when moderately firm pressure is applied to it (palms placed flat on top of the box at opposite ends). c) Tunnel has been pegged to the ground if specified.
5.	Trap is cleaned correctly	<ul style="list-style-type: none"> a) The entire trap is substantially free of animal matter (fur, tissue and bone) from previous captures. b) Any uneaten bait and captures have been discarded at least 5m from traps and away from waterways. c) Both ends of the tunnel are clear of vegetation to 300mm. d) Tunnel is in good condition.

- All traps should be 'audited' at least once a year
- Whio Manager can assist in reviewing problem traps which haven't caught anything over two years
- It will usually not be practical to check the entire network in a single audit. Over subsequent audits you could seek to check sections missed in previous audits. To help avoid bias your audited sample of the network should be randomised. If you are constrained by time and unable to potentially check any part of the network, be aware of potential sampling bias. Sections that are inconvenient to visit for the purpose of audit are probably likewise for the purpose of servicing. Factors like capture rates of traps/lines or their exposure to the elements (e.g. sections in damp gorges or coastal exposed sites) may create higher trap cleaning/clearing/maintenance needs.