KORU BIOSECURITY MANAGEMENT

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Progress Report on Niue Feral Pig Management Pilot Programme

I travelled to Niue Tuesday June 23 to Saturday July 3 2015, with master hunter Glen Osborne. Wednesday to Friday were spent with Glen searching for pigs, as Huggard was still busy with Dave Moverley on the weed programme. The hunting details of the trip are included in Glen's report (attached).

Some time was spent with Glen on hunting (particularly the weekend) or in liaising with hunters and landowners in informing them of operations. The first and most obvious thing I noticed was the dramatic decrease in pig sign and crop damage, compared to my 2 previous visits. There was virtually no crop damage detected in 9 days surveillance across virtually all of Niue. This is discussed below.

Lured enclosure

A new radio switch was installed in the in the gate and the cellphone in the camera was adapted. This was successful in making the gate trip remotely as planned but the camera would not send pictures to cellphone, despite the manufacturer's claim and advice of the New Zealand electronics expert. It appears that we will not be able to use the Niue Telecom network to make remote control work until Telecom both upgrades to 3G and improves coverage.

We were also unsuccessful in detecting or luring pigs into the general area, despite use of coconut and fish waste. There was no pig sign detected in the wider area over the 10 day period. This indicated that owners were confining pigs in that area.

All of the equipment will be able to be used in time, so it can remain in the container indefinitely. On my next trip I will remove the electronics from the field and return them to the container. I have requested advice from a range of technical experts regarding currently available remote control options. To date these options are more costly and likely to be unreliable, however new and cost-effective technological solutions are very likely to be made available in the next two years.

The lured enclosure concept has many advantages, chiefly the ability of the community to make its own decisions about the fate of wandering pigs and a very strong incentive for more responsible pig management (as pigs can be easily identified). Other advantages include cheap running costs and recovery of all meat.

Toxin trial

In the 10 day period prior to my visit, Huggard and his team had used coconut as a lure, as suggested, for 2 bait boxes in the field. These also had trail cameras in place. A huge number of pictures were taken. These showed the following:

- Pigs visit the sites frequently, mainly at night but reasonably frequently in daylight.
- Pigs typically visit 2-4 times each 24 hour period, at least 2 hours apart but normally 4-5 hours apart.
- The pigs don't tend to eat very much at each visit. Pigs in groups eat in orderly fashion, i.e. don't fight over food.
- 84% of the visits are single pigs, 12% were in pairs, 4% were in groups of three.
- Most of the pigs were domestic or domestic cross (Tamworth, Duroc, Berkshire, etc.) in appearance, and healthy. The others were the expected spotty black on white, long-nosed (traditional feral) type, usually thin.
- Most of the pigs are not large, rather they are 40 lb – 80 lb in size (cf. most of the hunted pigs were large boars - 120 lb - 160 lb).

- The sex ratio is approximately 50-50 as expected.
- Pigs readily eat from the boxes when the lid is up or lowered. After 1 or 2 days they also become adept at opening the lid when it is fully closed.

The pictures and extrapolated data indicate that pigs will be very easy to cull safely and cheaply using the sodium nitrite toxin technology. However probably half or more of the pigs visiting the boxes were likely to be wandering domestic animals. This will mean that:

- In future, bait box placement will need to be in the bush a lot further away from sties (and, consequently, further away from some gardens); and/or
- some pig owners will simply suffer the consequences of a toxin-based programme, at least initially until they learn to keep pigs in sties permanently; and/or
- lured enclosure or cage trapping methods (when proven to work) are likely to prove more popular as no meat will be lost). This also means that the toxin technology will act as a strong driver for behaviour change amongst pig owners, i.e. to keep their pigs contained.

I detected a reticence to deployment of the toxin programme. This did not appear to be based on a dislike of sodium nitrite, as people stated that they use it as brine for curing pork. Rather the objection appeared to be the loss of recoverable meat.

Having due regard to all of the issues and conditions on Niue, I believe it is now appropriate to deploy encapsulated sodium nitrite in the field. In my next trip I will deploy toxin at 3 or 4 sites to test its efficacy in the field. I will also attempt to determine the ratio of wandering pigs to feral pigs interacted and culled.

Snares

A number of improved snares were supplied, i.e. unbreakable wire, shackle-ended to allow for repeated use. These were deployed. Pictures obtained from cameras showed that the snares do catch a percentage of the pigs visiting food sites. This is perhaps 20-40%. Snares are very cheap and easy to use. However, despite very widespread deployment on Niue, this low success rate make snares unsuitable for achieving the necessary major reduction in feral and wandering pigs numbers.

There is also a lack of concern for the inhumane aspects of snare use on Niue. Most snare users report that snares are deployed and not checked for days or weeks. Recent enhancements to animal welfare legislation in New Zealand, expected to be mirrored throughout the Pacific, mean that use of snares is unlikely to be approved by external funding agencies. For these reasons it is not intended to proceed any further with use of snares in this programme.

Scientific hunting with dogs

Master hunter Glen Osborne spent all of his time either hunting or recording and analysing hunting data, apart from one half-day workshop with local hunters. Of the hunting time, 44% was spent with local hunters and 56% with either myself, Huggard or his staff. Glen's report is attached.

The hunting methodology includes use of dogs trained for pig hunting only, GPS collars on the dogs, and hand held GPS unit. The technology worked very well indeed, in no small part due to the Niue GPS mapping overlay which proved accurate.

11 pigs (plus 3 piglets) were culled, 8 boars and 3 sows, a disproportionate bias towards male pigs. The boars were almost all very large and in excellent condition, whereas the sows were small and very thin. The pig breeds were almost all domestic (Duroc or Berkshire) cross.

Glen proved that this hunting methodology is a very efficient means of locating and culling pigs. His dogs were very disciplined, showing no interest whatsoever in chickens, cats, other dogs or even domestic pigs in pens. Any prior fears regarding risks to domestic pigs were quickly dispelled.

Local hunter Kala showed much promise in adopting both the scientific methodology and in controlling dogs appropriately.

The only downside of this option is the cost of bringing dogs to Niue and returning them to New Zealand. The veterinary and quarantine charges are prohibitive (approximately $7,000 per dog). The option of using New Zealand hunters on a regular basis is therefore not affordable. This hunting option can only be useful as a training measure for implementing long term control using local hunters and dogs.

Training 2 local hunters to manage the feral pig population would be much accelerated if NZ-trained dogs were introduced gradually into the hunters' employ. This exercise should accurately establish feral pig numbers and demonstrate if local hunters can be trained to manage an effective programme.

Workshop with local hunters

Glen Osborne's report covers this in depth. What transpired from the workshop was that most of the pigs caught are via snares rather than hunting, and that most hunters don't use dogs. Few pigs are caught by snare and far fewer pigs are caught via hunting. Perhaps only one or two hunters on Niue have dogs that are effective at hunting pigs. This confirmed my earlier view that hunting (other than catching by snare) is uncommon and having no impact on overall pig impacts on Niue.

Meetings were also held with Dr Josie Tamate, Director General, Ministry of Natural Resources, and Ross Ardern, NZ High Commissioner to Niue, where programme progress was discussed. Two short segments for Niue television were shot and interviews given for the local newspaper.

Discussion

Glen Osborne's report on hunting and the workshop, and the data and pictures from the toxin trial sites, all support the scenario of pig dynamics on Niue as described below. The data extracted from the cameras means that use of transponders on pigs would not produce any additional worthwhile data.

The large difference in size between the hunted pigs and those visiting the bait boxes supports the view that this latter group are mainly young, wandering domestic animals. Of the hunted feral pigs, the large preponderance of boars and their breed, and the lack of family groups (80%+ singles, contrasting sharply with worldwide data), suggests that these pigs were almost all released male piglets. The very poor condition and low number of feral sows indicates very low recruitment rates within the feral pig population.

The general absence of crop damage on the third trip, in strong contrast to the high levels recorded in September 2014 and April 2015, indicates very strongly that most crop damage is done by wandering domestic pigs and that advertising of the impending hunting programme led to many or most pig

owners confining their pigs for that period. This also indicates that any pig control programme aimed at (or affecting) wandering domestic pigs, would act as a strong incentive for pig owners to keep pigs confined.

From this it can be determined that:

- there are almost certainly no more than 200 feral pigs on Niue, the true figure is more likely to be around 150
- almost all of the feral pig population arises from release of domestic male piglets
- local hunters are currently not effectively managing feral pigs
- the feral pig population could be easily managed by 1 or 2 fully trained hunters with proper dog training and adoption of GPS technology
- Hunter training should include leaving a NZ-trained dog with the best Niue hunter on the next trip, and possibly an additional dog on the following trip.
- many snared pigs are wandering domestic animals rather than ferals
- a great deal (perhaps most) of the crop damage is being caused by wandering domestic pigs rather than ferals
- hunters are very unlikely to be able to control wandering domestic pigs, however the toxin technology is very likely to be able to minimise or eliminate this problem due to pig mortality and behaviour change amongst pig owners
- use of toxin might well induce appropriate behaviour change from pig owners, i.e. in keeping pigs contained.
- The preponderance of single pigs indicates that use of single catch pig traps might be beneficial on Niue. This option will be investigated
- there are not sufficient feral hunted or snared pigs to account for the tallies included in the pig tail bounty
- most of the pig tail bounty is being spent on domestic rather than feral pigs. Many of these pigs may not have been hunted or snared.
- the bounty is therefore completely ineffective at reducing pig numbers and the budget (approximately $5,000 pa) should be redirected at another pig control programme.

No hunting programme is likely to be able to manage wandering domestic pigs, as these pigs seldom wander far from habitated areas where hunting does not occur. A toxin programme is much more likely to reduce this problem.

The other key finding is that better management of domestic pigs needs to become a government priority, otherwise the issue of piglet release and wandering domestic pigs will not abate. The commitment by DAFF to implement a knockdown programme is to be applauded.

Confirmation of the pig release problem means that a regulatory programme, including pig ID (marking or tagging), will need to be implemented concurrently with the knockdown programme.

The disease issues amongst domestic piggeries, piglet release issue, and the ongoing cost to owners of retaining a boar and sow, all point to the desirability of introducing licensing of pig breeding.

DAFF could make any changes to pig regulation palatable by incentivising compliance. This could be by provision of nipple-style water dispensers and other means. All changes should be prefaced by an extensive outreach programme containing advisory services and incentives.

Recommendations

- A further visit by Glen Osborne and another hunter, using 3 dogs, with 1 dog to be left with the best Niuean hunter. If successful, the dog transfer will be repeated. This exercise should accurately establish feral pig numbers and demonstrate if local hunters can be trained to manage an effective programme.
- Limited deployment of encapsulated sodium nitrite, under strict conditions, at 3 or 4 sites. All sites to be under camera surveillance at all times.
- The Niue Government implements a programme of improved domestic pig management, to eliminate or at least minimise release of piglets into the wild. This programme to include mandatory pig identification and neutering of non-breeding boars, advisory services, incentives and regulation.

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