


**THE DEVELOPMENT OF THE
'ULTIMATE' FERAL HOG BAIT HOPPER**
Are we heading in the right direction?

A/Prof Steve Lapidge
Programme Leader- Product & Strategy Uptake
2010 Fulbright Professional Business/Industry Scholar



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Issue 1:


- Campbell, Lapidge & Long (2006) WSB; Campbell & Long (2007) JWD; Campbell & Long 2008 JWM and Campbell & Long 2009 JWM have shown 'pig' baits are not species-specific in Texas.
- Bait hoppers/other devices will be required for delivery of pharmaceuticals to feral swine.

Issue 2:

- **No such thing as the 'ultimate' hopper design.**
- Each has pros and cons depending on the required use pattern.

Issue 3:

- No current designs will keep out black bears.



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Why not use a commercial hopper?





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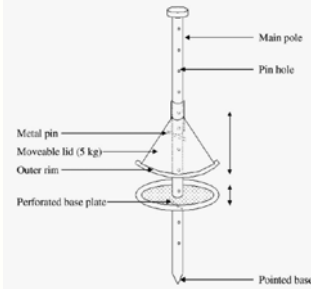
Overview

- UK- Boar Operated System™.
- EU- Piglet feeder.
- NZ- Connovation hopper.
- USA- NWRC hopper designs.
- AUS- Boar Buffet® ⇒ Hog Hopper®.
- Bear-pig range overlap: what to do?
- Your design?



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UK- Boar Operated System™



- **Developed by FERA to deliver anti-fertility baits to European boar.**
- **Pros-** high target-specificity in UK, USA; transportable; durable; weather proof.
- **Cons-** heavy; price; few baits; targets adults, monopolization, spillage.



Massei *et al.* 2010. *Journal of Wildlife Management* 74: 333-336.

Spain- Piglet feeder



- **Developed by IREC to deliver vaccine baits to European boar.**
- **Pros-** excludes large mammals; transportable; durable.
- **Cons-** heavy; bulky; price?; only targets piglets; little target-specificity; weather-proof?



Ballesteros *et al.* 2009. *Wildlife Research* 36: 203-212.

NZ- CONNOVATION
CONSERVATION BY INNOVATION
bait hopper



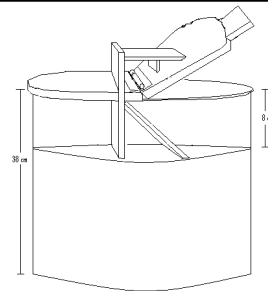
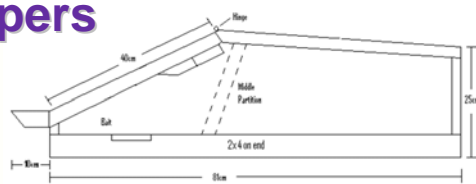
- Developed by Connovation to deliver nitrite baits to feral pigs.
- Pros- cheap; easy to use; large hopper.
- Cons- doesn't self-reset; not target-specific; temporary; bulky; prone to weather.



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**USA- bait
hoppers**

United States Department of Agriculture
Animal & Plant Health Inspection Service
Wildlife Services
National Wildlife Research Center



- Developed by USDA NWRC to deliver pharmaceutical baits to feral swine.
- Pros- cheap; easy to use; self-closes; large hoppers.
- Cons- not target-specific; wood construction; bulky for transport.



Long et al. 2010. *Rangelands* 32: April

AUS- bait hoppers  **Invasive Animals CRC**

Boar Buffet 

Hog Hopper 

- **Developed by IA CRC to simultaneously deliver toxic bait to large mobs of feral pigs.**
- **Pros-** target-specific; durable; large hopper; weather proof; flat packs; easy to use; multi entrance.
- **Cons-** BB heavy & expensive; price; NT risk. HH still \$400.

 Lapidge *et al.* 2009. *Wildlife Damage Management Conference* 13: 49-59.

What to do about black bears?

- Black bears and feral swine co-exist in some states - Florida, California – but certainly not all.
- Use biology to separate species- bait in winter.
- Trap and shoot pigs when bears active.

Feral swine distribution 

Black bear distribution 

 <http://128.192.20.53/nfsm/s/> http://www.bearinfosite.com/black_bear_map.htm

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Your design? *The tradeoffs...*

- **Large** (more baits) vs. **Small** (less risk) unit.
- **Cheap** (temporary) vs. **Durable** (expensive).
- **Self-closing** (higher TS) vs. **Open lid** (piglets).
- **Manufactured** (price) vs. **Simple** (easily copied).
- **Assembly** (flat pack) vs. **Rigid** (higher freight).

Design features must be led by **desired end use**:
mobs vs. individuals, adults vs. piglets, regular vs.
infrequent checks, antifertility vs. vaccine vs. toxic.



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Conclusions

- Delivering pharmaceuticals to feral swine will require a bait hopper in the immediate future.
- 'Ultimate' hopper design does not exist.
- Hoppers do not require registration – baits do – can legally use multiple designs.
- Future research should focus on where each design works best.
- **Overlap in swine & bears is over-estimated.**
- A bear-proof hopper is ideal, but bait delivery to swine should not be held up until one is found.



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