

One of the drivers of global forest loss is illegal logging for international trade, which causes the loss of timber species and contributes to global climate change. A key question in the enforcement of conservation regulations is how to find operational methodologies that facilitate the detection of illegal

The study was designed to develop an appropriate training programme and to train two dogs to detect specific timber species by scent. The initial training demonstrated that a trained dog is able to distinguish selected timber species from one another. The training was conducted by professional dog trainer Steve Austin, of Sydney, Australia.

DETECTOR DOGS SNIFFING OUT ILLEGAL TIMBER

timber hidden in legal timber shipments. Detector dogs can perceive the smallest concentrations of odours and have a highly evolved ability to discriminate between scents. They are used to detect hidden contraband like drugs, weapons, cigarettes and cash, but are also suitable for the detection of wildlife and their derivatives and thus are an appropriate tool in the fight against wildlife smuggling.

In 2004, WWF Germany started a project on the analysis of stable isotopes in timber samples and, later, a combined project with stable isotopes and DNA fingerprinting to verify the timber species and origin of these samples in order to uncover illegal timber in trade. Owing to the huge amount of timber traded internationally, however, it will not be possible to investigate high numbers of samples with these methodologies. Detector dogs trained to identify specific timber species could provide initial findings that can subsequently be scientifically analysed using, for example, the above-mentioned methods.

In 2010, WWF Germany, as lead partner of a consortium made up of enforcement agencies from the EU Member States of Austria, the Czech Republic, Germany, Italy, Lithuania, the Slovak Republic and the UK, as well as a number of WWF offices and TRAFFIC, initiated the project *Combating illegal wildlife trade by improving existing wildlife detector dog programmes and fostering the establishment of similar programmes throughout the EU*. The project, which concluded in 2013, was funded by the European Commission Directorate-General Home Affairs.

The project aimed to improve the enforcement of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the EU Wildlife Trade Regulations (e.g. *Council Regulation (EC) No. 338/97*) within the EU by increasing the use of wildlife detector dogs. Existing wildlife detector dog programmes within the EU were investigated to explore the full range of use of detector dogs and to facilitate the exchange of knowledge between these programmes and interested EU Member States. Furthermore, a feasibility study was designed to show the opportunities—and limitations—of using dogs to detect specific timber species, for example at sea ports.

DOG SELECTION

The selection of the dogs was undertaken over an eight-month period, during which time many dogs were tested, including breeds like Labrador, German Short Hair Pointer, Golden Retriever, Border Collie, and Australian Kelpie. The Working English Springer Spaniel was chosen as it is a proven detector dog in many countries, with a strong work and hunt instinct, and an excellent temperament. In addition, this breed has a strong human bond development and this was an important factor in the selection criteria.

The dogs chosen were a two-year old bitch called Jarra, and a 16-week old bitch called Willow. Both dogs have been characterized by a very strong drive to play and were extremely outgoing and co-operative.

TRAINING METHODOLOGY

Timber species

The Johann Heinrich von Thünen Institute¹ provided a range of timber species for the training of the dogs, both of non-protected species and those that are protected/ listed in the CITES Appendices.

One protected tree species used was Big-leaf Mahogany *Swietenia macrophylla* (CITES Appendix II covering Neotropical populations). The following species look similar to Big-leaf Mahogany but, with the exception of one species, are not protected: Spanish Cedar *Cedrela odorata* (listed in CITES Appendix III by Peru), African Mahogany *Khaya* spp., Sapele *Etandrophragma cylindricum*, and Sipo *E. utile*. The aim of the feasibility study was to train the dogs to detect *Swietenia macrophylla* even if it was mixed or hidden amongst the aforementioned species.

The second target timber was Brazilian Rosewood *Dalbergia nigra*, which is listed in CITES Appendix I. The following species are not protected but look similar to Brazilian Rosewood: Indian Rosewood *Dalbergia latifolia* and Jacaranda *D. spruceana*. Again, the aim was

¹Germany's Federal Research Institute for Rural Areas, Forestry and Fisheries, a research institute under the auspices of the German Federal Ministry of Food and Agriculture (BMEL).

to train the dogs to detect *D. nigra* even if it was mixed or hidden amongst samples of the other two *Dalbergia* species above.

In both training units, plantation pine and other common timber species were used to provide additional non-target odours. Both processed and raw timber were used.

Training on a selected odour

The dogs were rewarded each time they came into contact with the target odour. At this stage in the training, no other timber or non-targets were presented, so that the dog could concentrate solely on one odour. The training of the dogs to identify the selected target odour took about six weeks.

The dogs were trained to provide an active response, i.e. when they found the target odour, they would paw and dig at the odour source. When used in the field, such behaviour would help the handler of the detector dog to pinpoint the target timber species.

Scent discrimination training

After the six weeks training on a selected odour and once the dogs had become completely familiar with scent association, they were moved on to scent discrimination training. The target timber was mixed in with a non-target timber species and the dogs had to discriminate between the different odours. Overall it took about 14 weeks for the dogs to be able to discriminate between the two odours.

During training, many controls of non-target timber were placed in the training runs. If the dog responded to the non-target, no correction was used and the dog was told to continue to search for the target timber. By using a no-correction method on false responses, the dogs were always willing to keep trying.

After three months of training, the dogs had a success rate of over 90% of all trials, when targets and non-targets were mixed together in the same containers. The dogs showed no difficulty in finding the correct scent and there was no measurable difference between the two trained dogs.

Storage of the timber species

All targets and non-targets were handled with surgical gloves at all times and stored separately in a sealed room. This gave the dogs a very real scent picture and brought them close to actual field conditions.

Costs for timber detector dog programmes

The costs for selection, training and use of timber detector dogs vary significantly between countries and depending on the circumstances for which the dogs are used. It is therefore practically impossible to provide a specific amount for the costs of a wildlife detector dog programme.

The following factors have to be considered for the cost calculation:



Steve Austin with Jarra.

STEVE AUSTIN, PET RESORTS AUSTRALIA

- Purchase of the dogs;
- Building/maintaining a training centre and/or kennels at the place where the dogs are used;
- Food for the dogs;
- Veterinary costs;
- Training;
- Equipment;
- Costs of the dog handler.

The costs of setting up a timber detector dog programme may be reduced by exposing an existing detection dog on this programme to additional target timber scents. If such a dog is additionally trained to detect other wildlife specimens, the combination of items has to be chosen carefully. Control areas, trade routes, and other factors have to be taken into consideration.

CONCLUSIONS

Detector dogs can be trained to find target timber species among non-target timber species under controlled conditions. By using a combination of target and non-target timber species, this project was designed to imitate real conditions. Nevertheless WWF recommends that tests be undertaken in real situations e.g. at international ports.

This methodology may close existing gaps in testing large shipments of commercially used timber species in trade. The initial tests with the timber detector dogs can identify particular timber samples whose legality may need further investigation, e.g. by using methods such as stable isotopes and DNA fingerprinting.

For further information on this programme, please contact Volker Homes, TRAFFIC/WWF Germany (volker.homes@wwf.de).

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