



At right: the Murray Cod is a threatened species in Australia's waterways.

## Fish & chips: TROVAN technology implemented to catch poachers in Australia

Material contributed by: **Dr. Rick Walduck, Microchips Australia**

The northern fisheries' region in Australia covers 3000 kilometers of Victorian waterways, from the Eastern edge of the Alps to the South Australian border. This region is home to two prized endangered species of fish, the Murray cod and the golden perch.

Historically common favorites of locals, who according to Mike Hosking, operations manager of the Fisheries' northern region, would „chuck a couple of nets in and get themselves a feed“, these fish populations have declined dramatically. This is due to river regulation, thermal pollution, the construction of dams and removal of spawning and feeding sites, which inhibits breeding and in extreme cases threatens the survival of the fish. Despite managed river re-stocking and commercial sales from aquaculture farms, Murray cod and golden perch continue to become more scarce. One of the most significant threats is overfishing.

In a concerted conservation effort, the states sharing the Murray-Darling river basin (South Australia, NSW and Victoria) have banned commercial fishing of these species. Recreational fisherman may take the fish in the wild under controlled bag limits and in closed seasons. Law breakers face up to \$34,000 in fines and up to 12 months in jail.

However, as Murray cod now fetches \$38 a kilogram in Melbourne, and golden perch is in high demand in Asian cuisine due to its stability and texture in cooking, both have become lucrative targets for poachers, who set nets and lines of baited hooks in remote rivers or creeks, returning later to empty their traps. „It's become a money-

making business“, said Mike Hosking, operations manager for the northern fisheries' region.

Mr. Hosking initially placed officers at poaching sites for ten days at a stretch in an effort to apprehend perpetrators. However as the Victorian waterways span about 3000 kilometers, this was extremely labor intensive, expensive and often fruitless. To control poaching in a meaningful fashion, a different strategy was required.

The deployment of TROVAN microchip identification technology has already proven successful. Tiny rice grain sized TROVAN microchips are currently widely utilized by Commercial fish farms for a variety of purposes, among others to monitor growth and genetics. Northern fisheries have adapted this technology, tagging illegally caught fish and returning them to the poaching site. When the fish later turn up at randomly conducted market checks, they can be positively identified. Each fish's code is registered and indicates the net or line where it was caught. As the microchips can only be decrypted by the officials' specially programmed readers, they cannot be detected by poachers.

Shortly after the implementation of their RFID system, Northern fisheries made their first big catch. Gregory John Douglas, 42, having hidden four wire fish traps in a secluded section of Pyramid Creek, was observed checking them. In a raid three days later, authorities found fillets in his freezer that responded to their readers. They were able to charge Mr. Douglas not only for the possession and use of commercial fishing equipment, but also for taking and possessing Murray cod in a closed season.

# Saving the “Dragon Fish” for posterity

Material contributed by: Timothy NG, NSG Digital, Malaysian

Asian arowanas, also known as Asian bonytongue, and dragon fish, are actually several varieties of freshwater fish in the genus *Scleropages*. Native to Southeast Asia, Asian arowanas inhabit blackwater rivers, slow-moving waters flowing through forested swamps and wetlands. Asian arowanas are paternal mouthbrooders. Adults feed on other fish, while juveniles feed on insects.

These popular aquarium fish have special cultural significance in areas influenced by Chinese culture. Asian arowanas are considered "lucky" by many Asians, because of their resemblance to the Chinese dragon, an auspicious symbol. The large metallic scales and double barbels are features shared by the Chinese dragon, and the large pectoral fins are said to make the fish resemble "a dragon in full flight."

In addition, positive Feng Shui associations with water and the colours red and gold make these fishes popular for aquariums. One belief is that while water is a place where chi gathers, it is naturally a source of yin energy and must contain an "auspicious" fish such as an arowana in order to have balancing yang energy. Another is that a fish can preserve its owner from death by dying itself.

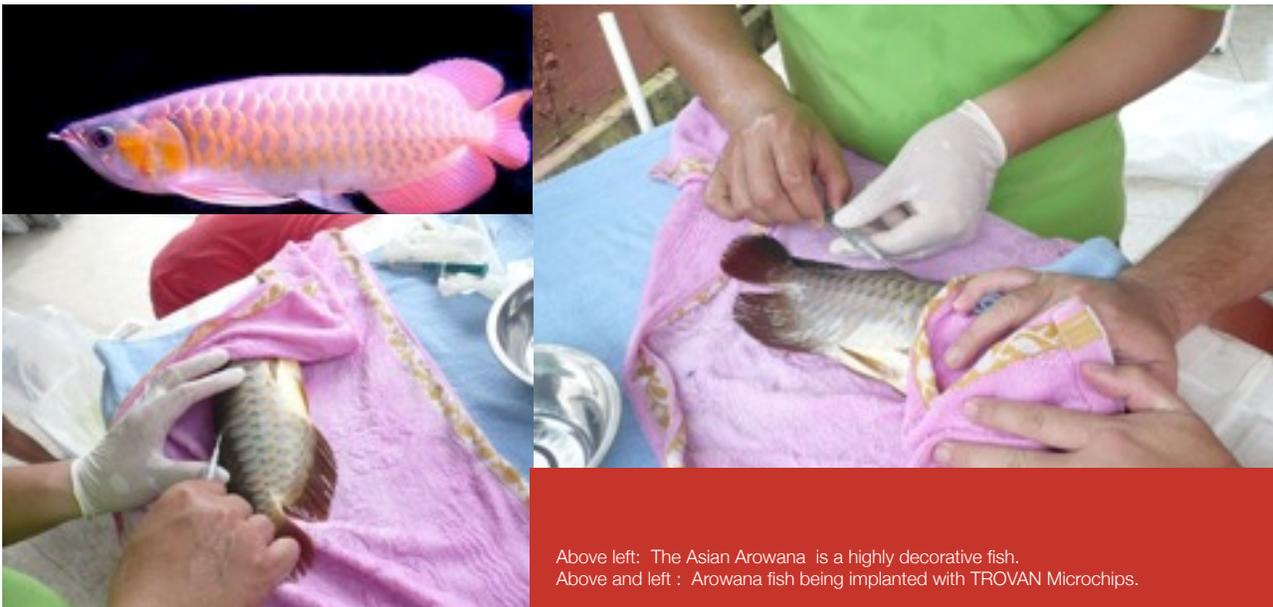
Because of their popularity (hobbyists may pay thousands of dollars for an individual specimen) and difficulties associated with captive breeding, they have been seriously overfished by the aquarium trade and are listed as endangered by the 2006 IUCN Red List. International trade in these fishes is controlled under the Convention on the International Trade in Endangered Species of Wild Flora and Fauna (CITES), under which it was placed on Appendix I, the most restrictive category, in 1975. *S. formosus* is one of only eight fish species listed on Appendix I.

Arowana fish breeders in Malaysia and Indonesia are now using TROVAN transponders to mark arowana fish, CITES reclassified the Asian arowana in the 1980's, allowing for the commercial breeding of the fish, in Indonesia. The hope was that local people would conserve wild fish stocks and breed the fish if there was an economic incentive. The programme proved a success and commercial breeding later expanded to Singapore and Malaysia. All Asian arowana legally for sale in the aquarium trade today are at least F2 offspring and are tagged with coded microchips. These microchips allow the fish to be identified as farm bred animals. Along with the microchip, each fish is also sold with a birth certificate that includes its microchip number and the name of the CITES registered fish farm where it was raised.

There are a number of registered CITES breeders in Asia and the specimens they produce can be imported into several nations.

## MALAYSIAN TILAPIA CHIPPED WITH TROVAN

The World Fish Center, formerly known as the International Center for Living Aquatic Resource Management, Inc. or ICLARM, has chosen TROVAN for positive identification of Tilapia production and breeding stock and to manage their genetics improvement programmes. ICLARM is a nonprofit organization involved in research and development of fisheries resources for developing countries, with headquarters situated in Penang state, Malaysia.



Above left: The Asian Arowana is a highly decorative fish.  
Above and left : Arowana fish being implanted with TROVAN Microchips.

# Korean national treasures get TROVAN Microchips

Material contributed by: Joseph Park, EIE Korea

All Korean Dog Clubs use TROVAN microchips for registration of Sapsaree dogs and the Jindo dogs.

The **Sapsal or Sapsaree** (Hangul: 삼살견) is a shaggy Korean breed of dog. Traditionally, these dogs were believed to dispel ghosts and evil spirits. The Sapsaree, dog was designated as a National Treasure (No. 368) in 1992 by the Korean Government.

Sapsarees are medium sized and slightly longer than tall. Their adult coat is long and abundant, and comes in various colors including solid and/or mixed shades of black, golden yellowish-blond, reddish-orange, browns, and salt-and-pepper greys. Their hair falls over the eyes in the same manner as that of the Old English Sheepdog. Although Sapsaree resemble herding dogs, they appear to have been bred exclusively as house dogs; their 'work' is spiritual rather than physical.

The Sapsaree has been identified and recognized by both leading Korean dog societies, the Korean Canine Club (FCI) affiliate) and the Korean Kennel Club.

In Korea, they are famous for their gentle, protective, and loyal characters. They are friendly and playful with people they are familiar with, but aggressive if another dog enters its homestead

**The Korean Jindo Dog** (Hangul: 진돗개; Hanja: 珍島개) is a breed of hunting dog known to have

originated on Jindo Island in South Korea. Although relatively unknown outside Korea, it is celebrated in its native land for its fierce loyalty and brave nature. The Jindo is recognized by the United Kennel Club on January 1, 1988, and by the Fédération Cynologique Internationale in 2005.

They are highly active and are certainly not indoor-only dogs. Jindo dogs need reasonable space to roam and run. If kept in a yard, the fencing must be at least 6 feet high due to their strong hind legs that enable them to jump high.

Because the Jindo is an active and intelligent dog, it will commonly think for itself. The same intelligence that allows the dog to learn commands and tricks very quickly can be a bit too much to handle. If left alone for a long stretch, it finds its own entertainment. A young Jindo may attempt to climb over a fence or wall, even by way of a tree or digging under, or tear up the house if confined indoors.

Jindos serve as excellent watchdogs, able to distinguish family from foe, friends from strangers. The Korean Army is known to use Jindos as guard dogs at major bases. Some Jindos display a curious aversion from running water and avoid situations that might get them wet. They let themselves be washed, although with great reluctance. Some may even be afraid of going out in the rain, which could lead to some difficulties.

The coat of the Jindo comes in white, yellow, red, red and white, tan, tan and white, black, black and tan, and brindle.

It is a medium-sized spitz-type dog. Similar in appearance to the smaller Shiba Inu and the larger Akita, they were originally bred to hunt wild boars, rabbits, badgers, and deer, working in groups or on their own. It is characteristic for the Jindo to bring down its prey, then to return to its owner to lead him/her to its catch. Jindos first started to appear in the United States in the 1980s. The Jindo is protected by Korean Law as a national treasure.

At right: A Korean National dog Jindo(진돗개), the most popular indigenous breed.



Above: The Sapsal dog (Hangul: 삼살견) is a shaggy Korean breed of dog. Traditionally, these dogs were believed to dispel ghosts and evil spirits.

# Tuatara release boosts rare Cuvier Island population

Courtesy of: Auckland Zoo, New Zealand ([www.aucklandzoo.co.nz](http://www.aucklandzoo.co.nz))

On 12 February 2008 two young Northern tuatara of Cuvier Island origin, bred at Auckland Zoo, were released back to their ancestral home to help boost this rare population – estimated to be fewer than 30 animals.

The two four-year olds bring to 20 – two-thirds of the total known island population – the zoo has now bred and released onto Cuvier Island since receiving six Cuvier adults from the Department of Conservation (DOC) in 1990. The last release from the zoo (11 animals) was in 2003.

DOC relocated the six adults to the zoo to begin a pest eradication programme on this Hauraki area island, which by 1993 was successfully cleared of the Kioere (Pacific rat). The zoo is the only captive facility in New Zealand breeding Cuvier-origin tuatara as part of DOC's 'Headstart' tuatara breeding recovery programme. The Tuatara in the programme are chipped with TROVAN Transponders, and read with GR-250 readers.

A further 14 zoo-bred young are expected to be relocated to Cuvier Island this spring, provided they reach the required 80 grams – the size at which they can adequately defend themselves from natural predators, including adult tuatara. In addition, four tuatara eggs from a clutch laid last December at the zoo, are currently incubating at Victoria University, and are expected to hatch between April and June. Another key partner in the recovery programme, Victoria University's role in incubating the eggs is enabling it to carry out important research into the influence of temperature on tuatara sex, as well as the effects of global warming.

"There's nothing fast about a breeding recovery programme with tuatara. It's the classic 'good things take time' with this dinosaur-age species, so every successful

birth is really important," says Auckland Zoo NZ fauna team leader, Andrew Nelson.

"It's incredibly satisfying to see our adults successfully laying clutches, to rear the resulting young for close to 48 months, and then be able to release fit and healthy animals back onto Cuvier to contribute to the recovery of this Northern tuatara sub-species," says Mr Nelson.

DOC ranger for the Hauraki Area islands, Rob Chappell, says while DOC could only find a total of six tuatara in 1990 (just prior to the eradication programme), they have since found another seven adults.

"It's possible there could be up to 30 by now, but they're extremely difficult to find," says Mr Chappell, who has worked on the rugged 196 hectare island since 1972.

"While tuatara reach sexual maturity around 14 years, they're in no hurry, and can potentially still wait years before deciding to breed. I'm not expecting to see a massive population increase in my life-time! But the great thing about Cuvier is it's safe – totally pest-free. We know this from the flourishing wildlife we're now seeing – from moko and shore skinks and Pacific and common geckos, to the return of seabirds such as red-billed gulls, white-fronted terns, fluttering shearwaters and diving petrels that are now confident of nesting back on the island," says Mr Chappell.

Overall since 1995, Auckland Zoo has released a total of 50 tuatara (Red Mercury Island, Cuvier Island, and Stanley Island) onto their respective islands.

TROVAN Microchips are used to identify all animals in the captive breeding and release programme.



Tuatara  
Lizard of  
New  
Zealand



## TUATARA BACKGROUNDER

**National Geographic News, Reporting Your World  
Daily Monday, April 26, 2010**

Found only in New Zealand, the rare tuatara is the only surviving member of the order *sphenodontia*, a lineage that stretches back to the dinosaur age some 225 million years ago – the beginning of the 'Age of Reptiles'.

Once living throughout the mainland of New Zealand, tuatara are now found only on 37 offshore islands. Total tuatara population on all these islands is estimated to be between 50,000 and 100,000.

The two recognised tuatara species are Brothers Island (*Sphenodon guntheri*) and Common tuatara (*Sphenodon punctatus*) – comprising Cook Strait and Northern tuatara. The Northern tuatara is found from the Poor Knights group in the North to Moutohora Island in the Bay of Plenty. Tuatara from Cuvier Island, like other island populations Auckland Zoo is working with (i.e. Stanley & Red Mercury islands) are bred separately, as it is thought they could be genetically distinct (though research has yet to confirm this).

A tuatara differentiates itself from other lizards: Its skull has extra holes; it has a pineal eye covered by opaque scales; no ear holes (though hears very well); and has serrated jaw bones which work as teeth.

Longevity: No one knows for certain how long tuatara can live. The oldest recorded tuatara is Henry (Southland Museum), born in the 1880s.

Cuvier Island, once part of the mainland, became an island about 12,000 years ago as sea levels rose around a coastal mountain, trapping the remnants of its mainland fauna and flora.

In 1879 Cuvier Island was made a lighthouse station. Farm animals, including goats, were introduced as food for the lighthouse keepers, and cats escaped and became wild. By the later 1950s, the forest had been reduced to open parkland and there were few sea birds. Saddleback, red-crowned kakariki, pied tit, tui and milktrees were extinct on the island and the tuatara population was reduced to seven known animals. In 1957, over half of the island was designated a nature reserve.

Tuatara live in burrows in native forests but they also enjoy abandoned sheep pasture, where possible resting sites may be more numerous. They can share burrows with seabirds, such as petrel.....

TROVAN Microchips are used to identify them.



Above Left: Cuvier Island.

Right: Tuatara Lizard in Cuvier Island is being scanned with TROVAN GR-2 Above 50 reader. The word tuatara means "spiny back" in Maori

# Kyungook National University starts livestock ID programme

Material contributed by: Joseph Park, EIE Korea

Kyungook National University, Yeongju Agricultural Extension Center, has started a program to prove the identity of the individual animals and the origin of beef products sold in stores. Kyungook National University Yeongju Agricultural Extension Center has recognized that FDX-B microchips are vulnerable to duplication and has therefore announced that ISO 11785 Annex A microchips are to be used.

Once the RFID transponder is implanted in an animal it stays there for life.

The RFID tags will be used to prevent theft of cattle, facilitate herd management and to combat foot and mouth as well as mad cow disease. It can also be used as proof

of insurance for which reason non duplicable RFID tags are essential.

RFID tags will be used for breed differentiation and to ensure the safety of food supply, because they can be integrated into automated slaughter house management. RFID technology will be used by accredited farms such as Gyeongbuk Yeonguu.

Cattle farmers will be able to use the system for beef brand building and promoting certified beef, thereby benefiting the farmers.



Above and Right: The Harwoo breed of beef cattle is considered one of Korea's most important native livestock breeds.

# The Parque Marino del Pacifico is chipping its specimens with TROVAN

Material contributed by: Eli Hardoon, Inversiones Ekida Inc. S.A., Costa Rica

The Parque Marino del Pacifico is located at Puntarenas city, on the paseo de los turistas, two hours from San Jose, the Costa Rica capital. Visitors to the Parque Marino del Pacifico will find animals in outdoor exhibition under the care of the Rescue Programme, such as crocodiles, ground turtles, sea turtles, pelicans, and others. Also, they have the opportunity of watching the aquarium exhibit with different samples of sea animals, among them puffers, anemones, crabs, sea stars, frog fish, clown fish, nurse shark, etc.

The Parque Marino de Pacifico is now using TROVAN-100 transponders to identify many species of marine life.

### Research and Development

The Parque Marino also researches and develops new technologies for production of marine fish species of high commercial value (snapper, sea bass and yellowtail). These new technologies will be used to implement a project to achieve sustainable cultures by means of a combination of controlled factors such as breeding, larval rearing and the production and application of live food or inert (microalgae, rotifers, artemia), as well as applying

controls and improvements to the nutritional, pathological and genetic aspects.

They have recently launched a programme monitoring the life cycle of Tilapia and are using the TROVAN transponders to positively ID individual specimens.



Many different species of marine life, including those pictured at right and above are being identified using TROVAN transponders.



## Deer matchmaking with TROVAN microchips

Material contributed by: Alex Cakl, Maria Vet, Czech Republic

The Livestock Production Research Institute in Prague is conducting a joint project with the Czech Deer Breeders' Association, investigating the partnership choices of female deer during the rutting season in October. The females have collars fitted with TROVAN ID-200 transponders. There are six males, each in his own meadow, and access between meadows is restricted

by small gates which the larger males cannot pass through. Antennas on the gates track the movement of the females from one meadow to the other. The custom made antennas for this application measure 30 x 70 cms, driven by LID-665 decoders. Since there is no access to VAC current in the area, the system is battery powered, with an on-site data logger.



Above : Partnership choices of deer are being studied using TROVAN transponders and readers.

## Masaryk Water Research Institute Using TROVAN microchips to track freshwater fish

Material contributed by: Alex Cakl, Maria Vet, Czech Republic

An on-going research project conducted by Prague-based T. G. Masaryk Water Research Institute, in the Sazava river is studying carp, pike, perch, sheatfish and other species.

The objective is to identify how the different fish populations in the river are interacting and how water quality and minerals at the river bottom affect them. Custom-built pass-through antennae placed at several weirs in the river allow researchers to monitor which fish are passing through the weir and when. The pass-through antennas measure 30 x 110 cms, driven by LID-665 decoders.



Above: Masaryk Water Research Institute studies fish populations.

## Iran Veterinary Organization chips horses with TROVAN in glanders eradication effort

Material contributed by: Dr. Shahram Jalilzadeh, IRADATA, Iran

Iranian distributor IRADATA reports that they have joined forces with the IVO (Iran Veterinary Organization) in a plan for the prevention, testing, diagnosis and treatment of Glanders disease in horses. Glanders is a contagious, usually fatal bacterial disease in horses, mules and donkeys. Human contraction of the disease, while uncommon, is painful and life threatening. The fatality rate without antibiotics is 95%.

The current prevention project came in response to a case of glanders reported by Iran to the OIE (World organization for animal health) on November 13, 2007. Post-arrival quarantine facilities identified one case of

glanders among 36 susceptible animals which were thought to be part of an illegal horse transport from Iraq. Thought to be endemic to Africa, Asia and South America, the last reported case in Iran was in 2001.

Through the active surveillance programme, horses are microchipped with TROVAN transponders and registered in the IRADATA database. All related procedures, such as prevention, testing, diagnosis and treatment are entered and tracked in the IRADATA database.

## Iran Race Horses get TROVAN chips

Material contributed by: Dr. Shahram Jalilzadeh, IRADATA, Iran

The Iran Equestrian Federation has announced new regulations and made microchipping obligatory for racing horses. If a horse is not microchipped it may not compete. Before each race, horses are scanned for

microchips and the microchips code verified with the animal's ID card (issued by TROVAN distributor Iradata) and confirmed against the registration form.

At right: Caspian horses are one of the best racing horses in Iran. There is nothing that Caspian horse could not do well from racing and jumping to gymkhanas, hunting and harness.



# The Caspian Horse Association adopts TROVAN

Material contributed by: Dr. Shahram Jalilzadeh, IRADATA, Iran

The Caspian horse association, a NGO concerned with the identification and registration of Caspian horses, was looking for a reliable and permanent identification system. Iranian distributor IRADATA suggested microchip technology and explained the advantages of the TROVAN technology, the benefits of an advanced database, and of individual horse ID cards. The Caspian horse association has started a nation-wide program using TROVAN microchips.

The Caspian is an ancient breed of small horse rediscovered on the southern shores of the Caspian sea in 1965 by Louise Firouz. Small numbers still exist in a semi-feral state in the rice paddies, cotton fields and forests of the remote Elburz mountain in Iran.

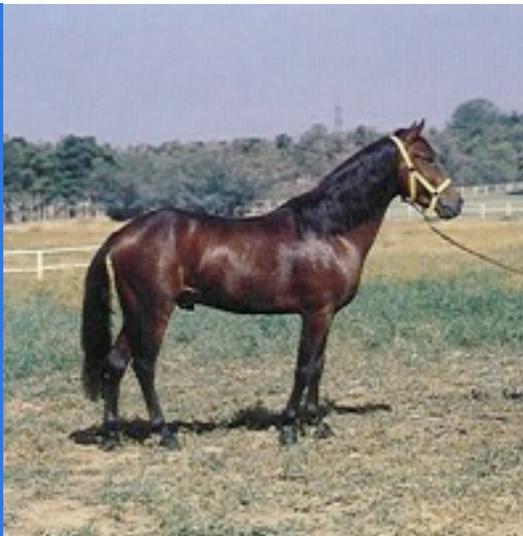
Horses of Caspian type were presented as gift to King Darius the Great (522-586BC). These horses were

depicted on the huge stone relief flanking the staircase in the palace at Persepolis, and on his trilingual royal seal.

The Caspian Horse is extremely hardy, with very dense bone and hard feet that do not need shoeing. Additionally, the pony is of great quality. The shoulder is sloping, allowing the pony to take exceptionally long strides, so that it can easily keep up with a horse at the walk, trot, and canter, despite its small height.

The Caspian is thought to be one of the oldest horse or pony breeds in the world today, dating back from the now-extinct miniature horses of Mesopotamia, who lived in the region from 3,000 BCE until the 7th century. The ponies now inhabit an area between the Caspian Sea and the Elburz Mountains, although new groups of horses potentially related to the Caspian have been identified in a much wider range. Today there are an estimated 400 in Britain and over 1650 in the world.

At right and bottom far right: Caspian horse is well and truly on the comeback trail, a f t e r extinction in the 20th Century.



Bottom Left: The Caspian breed holds a unique place in history as it was shown on the Seal of King Darius the Great.



# TROVAN tagged tarantulas to help track deforestation

By: John Pickrell in England for National Geographic News, June 9, 2003  
(The project is detailed in recent edition of the journal, *Biologist*)

Contributed by: Wayne Culberth, Infopet Identification Systems

Eight-legged, wriggly, and potentially menacing—tarantulas don't figure in many people's top ten favorite furry animals, though Memphis Zoo, Tennessee biologist and curator Steve Reichling might disagree. In fact, his longtime passion for the largest of spiders has led to their enlistment in a unique experiment.

Reichling has embarked on a novel, decades-long project: to map and quantify Belizean forest degradation with the assistance of 50 or more tarantulas surgically implanted with radio transponders.

Like much of Central and South America, Belize's rain forests have been altered by successive human cultures beginning with the Maya. For most of human history this has involved sustainable methods of land use such as small-scale slash-and-burn farming. However, modern large-scale agriculture is destroying rainforest at an unprecedented rate.

Reichling and his Memphis Zoo veterinarian colleague Chris Tabaka are collecting information about the success of tarantula populations in rainforest sites, and using it as a measure of the degree of damage to these habitats. The project, which began in March 2000, is expected to continue for at least 20 years, to follow what happens as the current tarantula residents die out and are replaced.

## Eight-Legged Monitor

Tarantulas are particularly suitable bio-indicators to map environmental change, because they can live for 20 years and remain in one burrow for life, making them easy to relocate year after year, says Reichling.

So-called bio-indicator species are those that scientists monitor to help understand how environmental change is affecting their habitat as a whole. Bio-indicators have included mammals, plants, and other species. For example, lichens, some of which need pristine air to flourish, have been used to indicate levels of atmospheric pollution in cities.

Though there are many suitable long-lived plant and vertebrate species to monitor tropical ecosystems, most invertebrates have relatively short lifespans, said Stuart Longhorn, who works on tarantula conservation genetics at The Natural History Museum in London. "Tarantula spiders are one of a few exceptions, and can provide a totally different viewpoint [from]...studies of vertebrates and plants alone," said Longhorn.

In order to quantify the impact of agriculture on natural habitat over the next 20 years or more, Reichling is following the fortunes of tarantula communities at three different sites in and around Belize's Lamanai Archeological Reserve. Each site consists of mature old-growth forest, long-barren open pastures, traditionally managed forest, and sites newly cleared for farming.

The researchers have already radio-tagged 50 individuals of two common Belizean species of tarantula: the cinnamon tarantula, *Crassicus lamanai*, which usually inhabits sun-baked clearings, and the redrump tarantula, *Brachypelma vagans*, which much prefers dense forest.

Changing proportions of the two species at forested sites should offer a quantitative measure of when deforestation has progressed to such a degree that the plot is no longer suitable for its original assemblage of species.

"We are especially interested in documenting an expected shift on the recently cleared areas [from a redrump-dominated site] to a cinnamon-tarantula-biased site," said Reichling. As old redrumps die out, if the habitat is no longer suitable, they won't be replaced, he said.

At right: A *Crassicus Lamanai* cinnamon TARANTULA

The name "tarantula" apparently originated in the 14th century, in the Italian city of Taranto, where people felt compelled to dance the wildly erotic Tarantella if bitten by a spider



### Intricate Operation

To monitor species numbers and survivorship year after year, the pair had to come up with a reliable way of marking tarantulas. That's a significant problem in a species that molts on an annual basis, shedding any markers. Some kind of internal tag was necessary, but such a procedure had never been attempted. The solution was to surgically implant rice-grain-size TROVAN radio transponders that passively transmit a serial number when scanned with a portable device.

"I'd been bumbling around with various schemes of leg painting and this just seemed like such an obvious use for [radio] transponders," said Reichling. "I got the idea from my zoo job, tagging the reptiles and thinking that the spiders I work with are larger than some of the animals we were marking."

Tabaka has perfected a technique to implant the tags into tarantula abdomens. The procedure can have complications, however. Spider blood doesn't clot for a start, so botched surgery can be fatal. "Imagine trying to implant a marble in a balloon filled with water, without deflating it!" said Reichling

In addition, Belizean tarantulas are often covered with stinging spines, which can be breathed in, or damage human skin and eyes, so protective clothing must be worn. Despite the complications, the surgeries typically go smoothly and most tarantulas emerge unscathed.

With the aid of a portable scanner the scientists can scan the burrows each year to see if tarantulas are still in residence. If they find burrows that don't turn up a signal at any of the sites, Reichling says they'll catch and tag new residents.

Studying the whole range of spiders in a habitat has previously been used to measure pristine or altered environments, said Paul Hillyard, arachnologist at The Natural History Museum in London, "but surgically tagging invertebrates is certainly novel." However, the surgical procedure is very invasive, and potentially dangerous to the tarantula, he cautioned.

At right: A redrump tarantula *Brachypelma vagans* of the type followed in the Memphis Zoo's study.

Tarantulas are characterized by their stocky appearance and the hairy body and legs. A more technical characteristic are the fangs that are parallel (pointing backward) rather than opposite as in other spiders.



# Kingfisher in 2009 “Bird of the Year” in Germany tagged with TROVAN

Contributed by: Jos Fransen, Euro I.D. Identifikationssysteme, GmbH, Germany

Kingfisher in Germany: an oft-chosen subject for paintings because of its brilliant colors and form.



In 2009, the kingfisher, known as the “flying jewel” was named “bird of the year in Germany.” It has already achieved this distinction once before, in 1973.

This distinction is unfortunately always a sign that all is not well with the species. The population has increased in recent years, and the species is classified as “decimated” in Europe, but over the entirety of its range it is classified as “threatened.”

The improvement in the population count was not least due to the “Kingfisher Man,” Horst Boedler of Flensburg, Germany. For the last 20 years he has been concerned with the continuing survival of the Kingfisher. 10 years ago he developed, built and patented a novel nesting box, which allows the kingfisher to nest even in areas that do not have steep cliff shores.

Horst Boedler monitors the success of the breeding season and rings the young kingfishers. He is well known even beyond the borders of the state of Schleswig Holstein. He sells his nesting aids commercially, although his investment of time and money far exceeds any financial gains from these sales.

Since 2001 he has ringed over 1,000 young birds, in cooperation with the Vogelwarte Helgoland. For his exceptional achievement as a volunteer, Horst Boedler has received the Cross of Merit of the German Federal Republic from the German President.

The bird lives as a hunter of fish in streams and along steep coastlines, or near waters with the Boedler

nesting boxes in the vicinity, which offer it the ability to raise a brood. By examining the excrement and left overs in the nesting boxes, which include fish bones, researchers can determine the quality of the local waters and the range of fish that inhabit them.

In order to determine where a given kingfisher is nesting, the birds are implanted with TROVAN ID-100 transponders, and their perches and the entrance opening of the nesting boxes equipped with readers.

The Süderbrarup community, which is considered a model region, is using the LID650 decoders in conjunction with the ANTC100, which, because of its IP68 protective rating, can be installed even in wet environments.

The reader is integrated in an IP65 rated housing by Euro ID and all connectors are IP68 rated. The system has battery-buffered memory and can store up to 12,800 readings with a time and date stamp. As a result, readings can be collected over extended time periods without an on-line connection to a reader. The system needs very little power (less than 100 mA) and can be operated using a car battery as power supply, which means that the battery can be recharged using solar cells.

TROVANUPDATE December, 2010

# Introducing the LID608 a new versatile OEM board/decoder

## High performance

The LID-608 OEM High Performance Decoder Board features all decoder electronics on a single board. It has been designed for use with external multiple coil antennas, such as the ANT-610F Square Fast Read Antenna, the ANT-611 Sensor Antenna, and the ANT-612 Panel Antenna as well as single coil antennas. Reader activation can be placed under software control, or can be controlled by trigger. The board can be equipped with an LCD and can be connected to a load cell, allowing the operator to save an ID number and associated weight reading directly onto the decoder board.



## LID608 OEM DECODER BOARD

### DIMENSIONS

160 x 100 x 18 mm  
(6.2 x 3.9 x 0.7 in.)

### WEIGHT

120 g (4.2 oz)

### POWER SUPPLY

12 vdc +/- 5%

### INDICATORS

on board buzzer  
LED indication for reading  
LCD optional

### INPUTS

8 optical isolated inputs

### OUTPUTS

8 solid state outputs

### MEMORY

EEPROM 1024  
Optional second EEPROM  
Optional SPI mass storage device

### CLOCK CALENDAR

store ID numbers with date and time stamp

### INTERFACE

RS232, RS485, USB

### OPERATING TEMPERATURE

0°C to +50°C (32°F to +122°F)



## OPTIONS

BLT-608	Bluetooth comms option.
MEMEXP-1024	1024 Kb EEPROM to store 25,600 ID numbers, 12,800 w/ time& date stamp.
HOU-608	IP40 housing
HOU-608S	IP65 housing
PWS12V-1A	Regulated power supply 220V or 110VAC 1 amp. linear
PWSCAB	Mains lead
RS232CAB	RS-232 cable
USBCAB	USB cable
ANTCAB	Antenna cable, additional length

# TROVAN Antenna ANTSQR500

## Largest available pass-through antenna

This square antenna is made of a high density polyethylene (HDPE) optionally moulded with polyurethane. The antenna can be used to read ID100 type glass encapsulated transponders passing through the antenna opening (animal applications) or disc type transponders passing over the antenna (disc parallel with the antenna surface)

The antenna is delivered with a 4 meter industrial antenna cable (other lengths on request)  
Mounting is easy using the flanges welded on two sides of the antenna.

The ANTSQR500 High Performance Pass-through Antenna can be used in combination with the LID608 decoder or LID650 decoder paired with a TM 613 auxiliary board.

### DIMENSIONS

Max outer

600 x 520 x 150 mm  
(23.62 x 20.47 x 5.90 in.)

Inner

500 x 500 x 150 mm  
(19.68 x 19.68 x 5.90 in.)

### WEIGHT

5000 g (176.36 oz.)

### OPERATING FREQUENCY

-20°C TO + 70°C (-4°F TO + 158°F)

### ENVIRONMENT

IP65

### MATERIAL

HDPE

### CABLE LENGTH

4 meter

### READING DISTANCE

ID-100 95 mm (3.74 in.)

ID-200 200 mm (7.87 in.)

ID-400 360 mm (14.17 in.)

### OPTIONAL

IP68 protection (polyurethane moulded housing)

Custom cable lengths available

