

**Use of transponders in the post-release monitoring of translocated spiny-tailed lizards (*Uromastyx aegyptia microlepis*) in Abu Dhabi Emirate, United Arab Emirates**

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THE United Arab Emirates (UAE) is experiencing a massive increase in development projects, which mostly comprise extensive urban developments, construction of industrial areas, expansion of existing and construction of new airports. These projects are encroaching on the habitat of a variety of species both along the coast and inland. A species which is being affected by this development is the spiny-tailed lizard (*Uromastyx aegyptia microlepis*). This lizard, locally known as 'Dhub', is a large, mainly herbivorous lizard belonging to the family Agamidae. Dhubs live colonially in burrows and so are readily susceptible to negative impacts of development projects. A recent taxonomical review suggests that the UAE may now host two species, namely *Uromastyx aegyptica* and *Uromastyx leptieni*, as a result of taxonomical work by Wilms & Böhme (2007). The Environmental Impact Assessments (EIA) from many development projects recommend the capture and translocation of Dhubs from development threatened areas. Therefore it is important to have a reliable method of post-release monitoring of translocated individuals to gather data on their survival and adaptation to environments, and gauge the success of such translocations.

#### MATERIALS AND METHODS

During 2005 an international airport expansion project in the emirate of Abu Dhabi was to impact a Dhub colony. Dhubs from this site were captured to avoid harm, kept in captivity (for ~ 6 months)

and later released in suitable habitat elsewhere within the emirate, within 10 - 53 km of the original capture site.

Whilst in captivity the Dhubs underwent basic veterinary assessments which involved treating one individual for an abscess and providing those Dhubs in poor condition with subcutaneous fluids that included vitamin B complex, electrolytes, amino acids and dextrose. During this period they were also injected with an AVID® (DNAchip) (Norco, California, USA) passive induced transponders (PIT) which was subcutaneously implanted beneath 'loose' skin, ventrally, in the abdominal region, distal to the hind limb, and caudal to the thorax.

To implant the transponder, the skin was first swabbed with surgical spirit and the implantation needle then inserted with the bevel of the needle parallel to the side of the body to minimize accidental injury. A dab of tissue glue (Vetbond Tissue Glue - 3M Vetbond™, St. Paul, Minnesota, USA) was used to close the skin post needle puncture to prevent accidental loss of the PIT. The PIT was checked for functionality pre and post insertion. It was noted that some Dhubs (usually younger specimens) 'inflated' themselves when handled, probably as a stress response, and for these we avoided inserting a PIT until they had 'deflated'. During capture and during monitoring of PIT tagged Dhubs each individual could be easily identified using a Planet ID reader (Essen, Denmark - [www.planetid.com](http://www.planetid.com)) and cross-checking the transponder ID in our database.

Male Dhub lizard	12th October 2005		4th July 2006*		21st August 2006*	
AVID® 97720000431465	weight (g)	length (cm)	weight (g)	length (cm)	weight (g)	length (cm)
	855	n/a	1,050	55	1040	56.2

\* the same individual was recaptured twice in July and August 2006.

**Table 1.** The weight and length of 'Dhub' over a period of 11 months with two recapture occasions

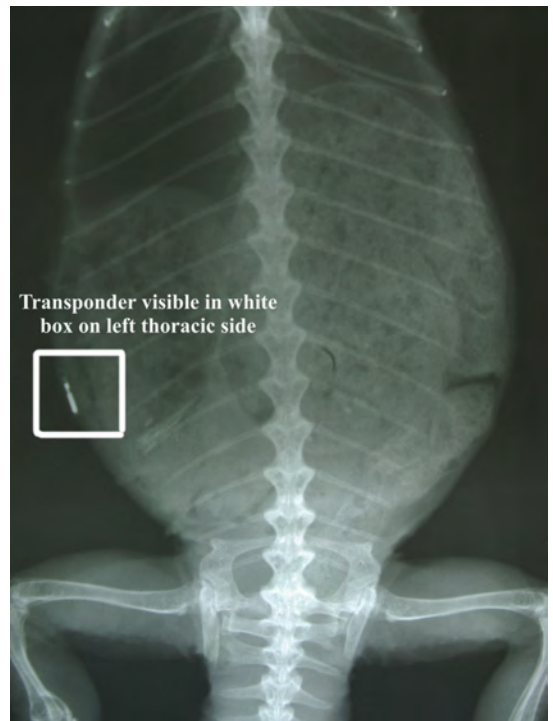
**RESULTS**

One of the Dhubs captured at the Abu Dhabi International Airport site (N 24.445126°, E 54.642424°) in approximately mid-2005 was released at Wrsan farm (N 24.609011°, E 54.801969°) of Abu Dhabi Emirate in October 2005 which was approximately 24 km from the original capture site. This Dhub was part of a group of 13 individuals that were released and had been implanted with AVID® transponders. This Dhub was recaptured during a routine health survey of Dhubs in Wrsan and a radiograph revealed a transponder whose unique ID was recorded (see Fig. 1). This individual also had a complete physical examination including weighing and measuring, blood sampling for haematology, blood chemistry analyses, faecal sampling and oral swabbing for parasite analysis and microbiology examination (Table 1).

**DISCUSSION**

PIT tags have been used successfully to mark many species, including pets, saker falcons, and a variety of wildlife (see [www.avidmicrochip.com](http://www.avidmicrochip.com) & [www.arrowheadreptilerescue.org / wildlife / pittag.htm](http://www.arrowheadreptilerescue.org/wildlife/pittag.htm)). Our work shows that the use of transponders can provide a safe method for the post-release monitoring of Dhubs, which can be individually identified using a PIT reader. Other methods of marking, such as the use of ink, are not permanent as these marks will gradually disappear after successive sloughing of the skin (Bennett, 1999). There have been reports of dead Dhubs being found with numbers written on their dorsum, however, because there is no unified numbering scheme there has been no way of knowing which project captured and released these Dhubs. Other methods such as the use of colored beads or belts can also pose a certain degree of risk to individual lizards and can also

be lost or dislodged (Bennett, 1999). Whilst in captivity there was some mortality of Dhubs, and in a number of cases the highly decomposed/dried carcasses were still identifiable as the PIT's were still present. However, in some cases the PIT was not detected with a reader indicating a loss of the PIT to an individual.



**Figure 1.** X-ray of 'Dhub' lizard showing transponder on left thoracic side

**CONCLUSION**

The use of transponders can provide a safe and reliable way of post-release monitoring of Dhubs. Projects undertaking translocations should be encouraged to use transponders and the unique ID stored in a central database. Translocation projects involving Dhubs should be set up as proper mark-

recapture experiments and any translocated individuals with PIT's remotely monitored by using readers in and around burrows to record individuals. Using mark-recapture and PIT would also greatly improve post-release monitoring and further improve release protocols of Dhubs in translocation projects.

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