

Cayman Turtle Farm Head-starting Project Yields Tangible Success

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Since 1980, as part of a head-starting programme, the Cayman Turtle Farm has released a total of 30,772 hatchlings and small juvenile green turtles (*Chelonia mydas*). This has included 16,434 hatchlings, 279 turtles between 2-11 months, 13,176 yearlings and 883 older turtles. More than 77% of these individuals were subject to a variety of marking techniques (Wood & Wood 1993) such as live tagging (n=14,189), carapace notching (n=1,268) and flipper tagging (n=4,032). An additional number were subject to both flipper and live tagging (n=4,494).

Wood and Wood (1993) analyzed data on those released individuals which had been recaptured through directed efforts in local waters (n=167) or captured in distant fisheries (n=122). They showed that head-started turtles were surviving locally and extending throughout the Caribbean region. Recapture intervals ranged from 13-2,511 days (mean 795 days, n=289).

The work begun by Wood and Wood (1993) has been continued and to date this research has compiled 514 local and 245 foreign recaptures, which include returns from Belize, Cuba, Honduras, Mexico, Nicaragua, Panama, United States, and Venezuela. These data are currently the subject of detailed analyses and will be presented elsewhere.

The past five years, including the 2002 reproductive season, have brought to light some key information regarding survivorship of head-started individuals, and highlights the value of living tags in the long-term identification of head-started animals. The following records of recaptured head-started turtles are particularly illuminating:

1) A sexually dimorphic adult male green turtle was found dead on the April 27, 1998 at Safehaven in Grand Cayman. The living tag in the second right costal scute identified it as an individual released as a yearling in 1984.

2) A second sexually dimorphic male green turtle was found injured with a speargun wound to the head in North Sound, Grand Cayman on May 24, 1998. This was identified as a yearling released by the Farm in 1984 by the living tag present in the second right costal scute. This animal was rehabilitated, tagged and released on July 21, 1998. At the time of release, its curved

carapace length (CCL) was 95cm, its curved carapace width (CCW) was 83cm, and its bodyweight was 95kg.

3) A sexually dimorphic male turtle was found in Florida in October 1998. It was alive but floating and swimming in circles and was taken to the Turtle Hospital in Marathon. It was identified by a flipper tag and by a living tag in the second right costal scute indicating his release in 1984 as a yearling. The turtle was rehabilitated and released the same month (Kristin Fick, pers. comm.)

4) A fourth adult male green turtle was captured whilst mating just offshore from the Cayman Turtle Farm on July 13, 2002. The fisherman who captured the turtle mistakenly assumed that it was one of the Farm's breeding stock which had escaped during Hurricane Michelle in November, 2001. There was a living tag in the first right costal scute indicating its release as a hatchling in 1983. The turtle was tagged with PIT and Dalton flipper tags and re-released on July 25, 2002 at which point its measurements were CCL = 108 cm, CCW = 89 cm, and bodyweight = 114.3kg.

5) An adult female green turtle was observed nesting on Seven Mile Beach, Grand Cayman on August 17, 2002 by a Turtle Farm employee. She demonstrated a living tag in the fourth right costal scute. This indicated it was released as a yearling in 1988. Subsequent attempts failed to locate this turtle and photo document the tag. Genetic material will be collected from the nest for analysis.

6) An adult female green turtle was observed on Seven Mile Beach on the August 25, 2002 with a living tag in the fourth left costal scute (see front cover of this issue) identifying her as a turtle released as a yearling in 1988. At this time of observation she tried repeatedly but failed to nest successfully. It is likely that clutches were laid by this turtle 10 days prior to the observation and also five days subsequently. It is hoped that hatchling genetic analyses will offer insights.

7) An adult female green turtle was observed nesting on Seven Mile Beach on September 4, 2002 with a living tag in the third right costal scute indicating her release as a hatchling in 1985. The tag and the nesting event were photo documented.

The lack of confirmed survival and reproductive

success of head-started individuals has been one of the main criticisms of head-starting as a conservation management tool, particularly in the case of the Kemp's ridley (*Lepidochelys kempii*) (Heppell & Crowder 1998; Heppell *et al.* 1996; Woody 1991). However, reports of successful breeding by head-started individuals on this and other projects now exist. In 1998, there were four confirmed nests in south Texas by three Kemp's ridley turtles from the experimental head-starting project on North Padre Island. These included a 14 year old from the 1984 year-class; a 12 year old from the 1986 year-class, and an 11 year old from the 1987 year-class. These three nesting females were identified from living tags, magnetic tags, and flipper tag scars. (Shaver & Caillouet 1998). Balazs *et al.* (in press) reported a head-started female green turtle nesting at French Frigate Shoals in 2000 after having been released as a yearling in 1981. More recently, a 15 year old female green turtle head-started as part of the Florida head-starting project founded by Ross Witham was observed nesting during the 2002 season on Melbourne Beach, Florida, about 60 miles north of her natal beach (Robert Ernest, pers. comm.).

The limited evidence presented here suggests that the Cayman Turtle Farm head-starting project and other similar projects have produced mature adults capable of contributing to local breeding populations at the point of release. Additional monitoring and research is needed to ascertain if more recently released cohorts of head-started turtles contribute to local populations and if head-started individuals have reproductive success comparable with wild turtles.

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BALAZS, G.H., G.L. NAKAI, S. HAU, M.J. GRADY & W.G. GILMARTIN. In Press. Year 2000 Nesting of a Captive-Reared Hawaiian Green Turtle Tagged and Released as a Yearling. Proceedings of the 21st Symposium on Sea Turtle Biology and Conservation, Philadelphia, Pennsylvania.

HEPPELL, S.S. & L.B. CROWDER. 1998. Prognostic Evaluation of Enhancement Programs Using Population Models and Life History Analysis. Bulletin of Marine Science 62: 495-507.

HEPPELL, S. S., L.B. CROWDER & D.T. CROUSE. 1996. Models to evaluate headstarting as a management tool for long-lived turtles. Ecological Applications 6: 556-565.

SHAVER, D. J., & C. W. CAILLOUET, Jr. 1998. More Kemp's ridley turtles return to south Texas to nest. Marine Turtle Newsletter 82:1-5.

WOODY, J.B. 1991. Guest Editorial: It's Time To Stop Headstarting Kemp's Ridley. Marine Turtle Newsletter 55:7-8.

WOOD, F., & J. WOOD. 1993. Release and recapture of captive-reared green sea turtles, *Chelonia mydas*, in the waters surrounding the Cayman Islands. Herpetological Journal 3:84-89.