

genetic variation within populations, moved through introgression from other populations, or do they arise as novel mutations? FELDMAN ET AL. (2009. *Proceedings of the National Academy of Sciences* 106:13415–13420) examined the molecular basis of repeated adaptation to the toxin of deadly prey in three species of Garter Snakes (*Thamnophis*) to determine whether

adaptation evolved through novel mutations, sieving of existing variation, or transmission of beneficial alleles across species. Functional amino acid substitutions in the skeletal muscle sodium channel are largely responsible for the physiological resistance of Garter Snakes to tetrodotoxin found in their Newt (*Taricha*) prey. Phylogenetic analyses rejected the hypoth-

eses that the unique resistance alleles observed in multiple species of *Thamnophis* were present before the split of these lineages, or that alleles were shared among species through occasional hybridization events. The authors' results demonstrated that adaptive evolution occurred independently multiple times in Garter Snakes via the *de novo* acquisition of beneficial mutations.

NEWSBRIEFS

Loggerhead Turtles Nesting in Pakistan

Renowned turtle expert Nicolas J. Pilcher, who was in Karachi for a seminar on threats to the turtles in Pakistan, has confirmed that a third species, the Loggerhead (*Caretta caretta*), was also nesting on these shores. Until now, the only two species recorded nesting in the country were Green Turtles (*Chelonia mydas*) and a smaller number of Olive Ridleys (*Lepidochelys olivacea*). By far the most widespread nesting is by the Green Turtle, from the eastern shores of Sindh Province all the way to the western shores of Balochistan. Recent findings by the IUCN Pakistan team, under the auspices of the Balochistan Partnerships for Sustainable Development project, have documented a third species, the Loggerhead, nesting at Daran beach, some 11 km southeast of Jiwani.

Positive identification of adults and hatchlings was made by Dr. Nicolas Pilcher, Co-Chair of the IUCN Marine Turtle Specialist Group, and a long-time turtle researcher and conservationist. Some sixty nests were recorded during 2009, and the work will expand in the coming months to determine the extent of this nesting. Loggerheads are known to nest in large numbers in Oman, on Masirah Island, and a small number nest in Yemen, but this is the first record of Loggerhead nesting in Pakistan. This latest discovery expands the nesting range for Loggerheads and raises their survival outlook in a climate where critical nesting habitats are being rapidly lost to development. The discovery also boosts known diversity of wildlife in Pakistan.

Pakistan used to host substantial numbers of Olive Ridleys along the shores of Sindh Province, but most have ceased to nest. Commercial fisheries are the main reason for this decline; with over 1,900 active trawlers operating just offshore, turtles have been accidentally lost to fishing nets. Trawling for shrimp and fish is known as one of the major causes of sea turtle mortality.

Luckily for the Loggerheads, Sindh-based commercial fisheries do not generally operate as far away as the western end of Balochistan, so the turtles have avoided the threats. Turtles can be saved from drowning in fishing nets through the use of Turtle Excluder Devices (TEDs), which are clever adaptations to nets that allow fish and shrimp to enter the net but turtles to

escape through a special opening. The IUCN intends to work with partners in the country to help introduce and promote TEDs so that fishing will have less impact on turtles. This may also result in the reappearance of Olive Ridleys.

For the past several decades marine turtle conservation programs have been underway in Pakistan. Most noticeable is the work undertaken in Sindh Province, on Sandspit and Hawkes Bay, where thousands of turtles have been protected through hatchery enclosures.

IUCN 14 February 2010



Nesting Loggerhead (*Caretta caretta*) have been documented at Daran beach, near Jiwani, Pakistan.

New Specialist Group for Chameleons

Chameleons are primarily found in Madagascar and Africa, with a few species distributed in the near east and along the coast of southern Europe. Although some species have broad distributions, many have extremely small ranges. Important habitats for chameleons are heavily impacted by human activities, and some restricted-range species are particularly vulnerable. Because of their unique appearance, and, in some cases, their exceptional ornamentation, chameleons are one of the most sought-after reptiles in the pet trade. Tens of thousands of wild chameleons are legally exported every year, which, with an illegal trade at unknown levels, is cause for concern. A Chameleon Specialist Group was established in February 2010 to address issues of sustainability and conservation of these unique reptiles. Its first major objective is to conduct a conservation assessment of all chameleon species for the IUCN Red List.

IUCN SSC e-bulletin
March 2010



Veiled Chameleons (*Chamaeleo calyptratus*) are but one of many species exploited in the pet trade. An IUCN Chameleon Specialist Group has been established to address issues of sustainability and conservation of these spectacular reptiles.