

Conservation news

Improving marine turtle conservation in Myanmar

Myanmar is host to five species of marine turtle: the hawksbill *Eretmochelys imbricata*, green *Chelonia mydas*, leatherback *Dermochelys coriacea*, loggerhead *Caretta caretta* and olive ridley *Lepidochelys olivacea*. Extensive surveys in Myanmar's delta region in 1911 indicated nesting populations of 3,750 olive ridleys and 5,000 green turtles but despite early attempts to regulate egg harvest (F.D. Maxwell, 1911, unpubl. data), these populations are in extreme decline (Ko Myint et al., 2017, *37th International Sea Turtle Symposium*), with nesting females now counted in the tens at former strongholds. The causes of this decline are many, including unregulated harvesting of eggs and bycatch by trawlers near nesting sites. The Department of Fisheries has attempted to alleviate this crisis by establishing hatcheries and supporting volunteers to protect nests. In October 2016 a workshop on marine turtles was held in Yangon with participants from the government, universities and NGOs. This meeting resulted in the development of a nationwide marine turtle conservation project led by Fauna & Flora International (FFI), supported by the US Fish and Wildlife Service.

This project started with training, attended by a total of 30 participants, on turtle biology, survey methodology, and the development of standardized survey forms to ensure consistency. Project partners were then supported to conduct beach monitoring at key nesting sites, and from December 2017 to November 2018 there were 277 patrol days. This resulted in the protection of 135 nests across four sites: Oyster, Thameehla, Moscos and Kandongalay Islands. Of these, 83 were green turtle nests, 14 hawksbill, 19 olive ridley, and 19 unknown. Hatching success rates averaged $70 \pm \text{SD } 19\%$ ($n = 81$) for the green, $62 \pm \text{SD } 8\%$ ($n = 3$) for the hawksbill and $77 \pm \text{SD } 19\%$ ($n = 2$) for the olive ridley turtle.

In 2018 temperature data loggers were deployed in nests on Thameehla and Oyster Islands. None of the nests reached lethal temperatures of $> 33^\circ\text{C}$, (R. Howard et al., 2014, *Endangered Species Research*, 26, 75–86). On Thameehla Island data loggers placed in the centre of two green turtle nests during Myanmar's hot season (March–May) recorded maximum nest temperatures of 29.6 and 32.2°C , respectively. A third data logger placed inside a green turtle nest in October, the end of Myanmar's monsoon, reached a maximum temperature of 29.2°C . Four data loggers were also placed in the sand near nests, at the same depth. These recorded maximum temperatures of 28.6 – 32.1°C . On Oyster Island two data loggers were used, during Myanmar's winter in December, one in a nest and one in the sand, with maximum recorded temperatures of 28.6 and 28.4°C , respectively.

Within hatcheries for nests relocated from flooding zones on Thameehla Island, however, temperatures were high, with a maximum of 36.2°C recorded in one green turtle nest. Sand temperatures within the hatchery reached 35.7°C in May, indicating that hatchery design and protocols need reviewing. Over the forthcoming 2019–2020 season a larger deployment of data loggers will provide better spatial and temporal understanding of nest temperatures, sex ratios and survival, and facilitate development of appropriate management measures, especially under the looming threat of climate change.

Overall, through the establishment of a national network comprising the Departments of Fisheries and Forestry, Myanmar universities, INGOs, the Myanmar fishing federation, and local businesses, measures have been initiated for the protection and recovery of marine turtles in Myanmar. These include capacity building, with Myanmar researchers beginning to take the lead; identification of more nesting beaches and establishment of additional monitoring sites; the recent introduction of a regulation making turtle exclusion devices mandatory on all trawlers and stow nets; and greater access to information for the public, especially fishers, on the importance of marine turtles and the laws surrounding their protection. This work is being used in the development of action plans to ensure the long-term conservation of marine turtles in Myanmar.

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Guidance published on facilitation of conservation-friendly market systems

Fauna & Flora International (FFI) has been working in partnership with Practical Action to adapt the latter's Participatory Market System Development approach to a biodiversity conservation context. A key output from this collaboration is a set of guidance documents, published in February 2019, to help conservation practitioners facilitate the development of more productive, fair, inclusive and biodiversity-friendly market systems. The tools and

methods described in these documents are designed to enable NGO facilitators to use both livelihood and conservation criteria to select the most appropriate market sectors on which to focus. Guidance is provided on how to engage key market actors, including private sector actors that conservationists may not traditionally interact with and who may not initially be interested in the environmental impacts of their businesses. Tips are provided on how to frame discussions in terms of business interests, such as product quality and sustainability of supply, and how these are related to sustainable use and conservation. Exercises are provided to help empower marginalized producers to have the skills and confidence to negotiate with input and service providers, as well as with traders, and with government agencies whose policies influence the business enabling environment.

A central element of the Participatory Market System Development process is bringing together key market actors to map their current market system, increasing their understanding of the roles of other actors and the importance of communication and information flows along the value chain. Through facilitated discussion of challenges and opportunities these actors can begin to identify simple strategies that they can implement to improve the system for mutual benefit. This process helps build more transparent, fair and trusting relationships between producers and other market actors.

The guidance documents include examples and case studies of how these tools have been applied in a wide range of FFI projects in Kyrgyzstan, Indonesia, Myanmar, Tanzania and other countries. Market sectors addressed include marine fisheries and non-timber forest products, and involve the participation and empowerment of both women and men. In all cases well-governed local natural resource management institutions, whether customary or newly established, have played a vital role in ensuring that local communities benefit from improved livelihoods without overexploiting their natural resource base. Secure tenure, in the form of officially recognized locally managed marine areas or community forests, has been shown to be a major enabling factor in the success of these initiatives. Strong links between support to market system development and conservation outcomes are key to ensuring that this approach incentivizes not just sustainable use but also has positive impacts on wider marine and forest ecosystems.

These newly published documents, together with a previously published Learning Paper, are freely available at fauna-flora.org/approaches/livelihoods-governance/sustainable-economic-opportunities.

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Concerns about trade in wild finches in Algeria

Songbird species across the globe suffer from excessive collection for trade. This trade can operate outside regulation and can lead to significant declines in wild populations. Songbirds such as finches are popular pets because of their singing ability, cultural value, and in some cases the social status that owning them can offer. The European goldfinch *Carduelis carduelis*, serin *Serinus serinus* and common linnet *Linaria cannabina* range across Europe, North Africa, the Middle East and East Asia and, although they are categorized as Least Concern by IUCN, they are affected by a range of factors that influence their conservation. The wild populations of serins and linnets are decreasing and, although the European goldfinch is increasing in numbers in some parts of its range, the population in North Africa is experiencing a drastic range reduction. Between 1990 and 2016 the species' distribution declined by 57% in the region as a result of the songbird trade (Khefifa et al., 2017, *Scientific Reports*, 7, 1092). From November 2017 to February 2018 we monitored Algeria's most popular classified advertisement website, and from August 2018 to December 2018 we visited 27 cities in Algeria. We searched the markets and pet shops for wild animals in trade. The European goldfinch and serin are included on the list of protected species, prohibiting all trade.

The three species of finch were the most commonly observed birds in markets and pet shops. European goldfinches were offered for sale in 25 of the 27 cities we visited, serins in 13 and common linnets in 11. We observed 3,197 European goldfinches, 295 serins and 162 linnets. In the online trade we found at least 5,480 goldfinches for sale in 394 advertisements. Serins and linnets were not traded online in significant numbers, with only two and one individuals observed, respectively. Despite the illegal nature of these sales, they are conducted openly, and no attempt was made to conceal the birds. Prices for a European goldfinch were USD 18–209, for a serin USD 2–15 and for a common linnet USD 4–13. A small number of birds were reported to be captive bred (5% in online sales), but the vast majority were said to have been taken from the wild. Vendors in every city in which there was significant trade of goldfinches reported that the majority of birds were sourced in Morocco and smuggled across the border.

Pet shops tended to have a small number of birds, averaging five goldfinches per shop. More were sold at the weekly markets (on average 160 goldfinches) that take place on a Friday or Saturday. Large-scale vendors, who store birds in a warehouse and bring them in boxes to the weekly markets, stated that they tend to bring only sufficient birds to sell each week, whereas small-scale vendors return with caged birds on multiple weeks, seeking a good price for a bird of high quality. Based on repeat surveys in a single market in Guelma, we found a minimum of 78% turnover within