

DAVID GUTTENFELDER/AP/NATIONAL GEOGRAPHIC CREATIVE

# SLAUGHTER of the songbirds

Mist nets are strung across flight paths to trap birds.

*Songbirds are a culinary delicacy in Cyprus — but catching and eating them is illegal. Even so, the practice is on the rise and could be threatening rare species.*

BY SHAONI BHATTACHARYA

It wasn't until I saw the blade glinting in the sunlight that I realized how grave the situation was. Broad and belligerent in army fatigues, the man strode along the track, ranting in Greek. Behind his back, his hands flexed a knife blade in and out of its wooden handle. This man was a trapper, a poacher of birds — and he clearly didn't want company. "What are you doing here?" he demanded.

My companions and I had come to this dry scrubland on the Mediterranean island of Cyprus to look for evidence of songbird trapping. The birds are caught illegally and eaten in a traditional dish called *ambelopoulia* — and I was joining a September trip to monitor the extent of trapping. With me was Roger Little, a British conservation volunteer, and Savvas, a field officer with the conservation group BirdLife Cyprus whose name has been changed to protect his identity. We didn't expect to encounter trappers at this spot in the southeastern region of Cape Pyla; they usually work at night, when the birds are active. But now it seemed that they had started patrolling the site during the day. "You are on my land," the trapper said to us in Greek.

"If this is your property, then I apologize — we didn't know, we are going," Savvas said. We acted casual as the man escorted us back to the

SOURCE: BIRDLIFE CYPRUS

battered four-by-four in which we had come. “I shouldn’t really be letting you go,” he muttered. Moments later, we were driving away.

Bird trapping in Cyprus has grown into a controversy that encompasses crime, culture, politics and science. The practice was made illegal more than 40 years ago — but that simply forced it underground. Today, trappers routinely cut wide corridors through vegetation and string fine ‘mist nets’ from poles to catch the birds, which are sent to local restaurants and quietly served. A platter of a dozen birds sells for €40–80 (US\$44–87), and the trade in songbirds is responsible for an estimated annual market of €15 million. The delicacy is so prized and lucrative that it is suspected to be linked to organized crime, and those trying to stop it have been subject to intimidation and violence.

Conservation organizations say that the trapping is increasing and that it is threatening rare bird species that stop in Cyprus during their migration. Last March, a report by BirdLife Cyprus suggested that some 2 million birds had been killed in the previous autumn, including 78 threatened species. The group claims that trapping — on top of threats from climate change, habitat loss and invasive species — could cause irreparable damage to some bird populations. “Illegal bird killing just cannot be justified, it’s like the last kick off the cliff for some species,” says Claire Papazoglou, executive director of BirdLife Cyprus near Nicosia.

But the picture is not black and white, in part because the extent of bird killing is disputed and its effects on bird populations are unclear. Critics have questioned the methods used by BirdLife Cyprus to estimate the numbers being captured on the island. The debate led to a workshop last July to discuss the science, with representatives from all agencies involved. Attendee Alison Johnston, an ecological statistician at the British Trust for Ornithology (BTO), a charitable research institute in Thetford, says that so little is known about the population sizes and routes of migratory birds in the Mediterranean that it is difficult to assess the full impacts of trapping. “If we knew more about the numbers,” she says, “we could say whether this is a critical number being killed.”

The debate over Cyprus’s songbirds could have wider repercussions, because bird killing is rife in other parts of the world. A 2015 report from BirdLife International estimates that hunters are killing about 25 million birds a year over the whole Mediterranean region; Cyprus stands out because so many are killed in such a small country. Globally, more than half of the world’s migratory bird populations are thought to be in decline. “This isn’t just an issue for Cyprus, or Africa, or Europe,” says Claire Runge, a conservation scientist at the University of Queensland in Brisbane, Australia, who led a study published last December showing that only 9% of migratory birds worldwide are adequately protected across their range<sup>1</sup>. “Countries will need to work together to find a solution to what is essentially a human–wildlife conflict,” she says.

Papazoglou worries that what is happening in Cyprus sets a dangerous precedent. “This level of rampant illegality in an EU country sends a terrible message to the rest of the world. If rich, stable and well-run countries cannot enforce wildlife law, what hope is there to get fragile countries in the Middle East and Africa to act?”

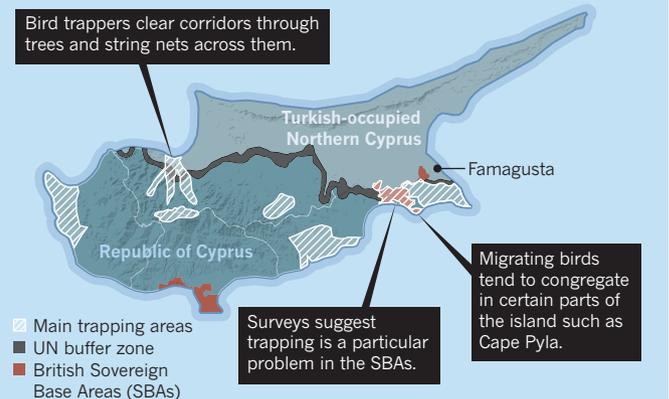
## GATEWAY TO CONTINENTS

Situated in the far southeastern corner of the Mediterranean, Cyprus is a gateway to three continents and has been fought over for millennia (see ‘Trapped in Cyprus’). It is currently sliced up into four jurisdictions: the Republic of Cyprus and the Turkish-occupied region of Northern Cyprus, separated by a UN buffer zone, and two small pockets called Sovereign Base Areas (SBAs) that were retained by the United Kingdom after the island gained independence in 1960 because of their strategic military importance. (Britain is currently using one of these areas to deploy air strikes to Syria.)

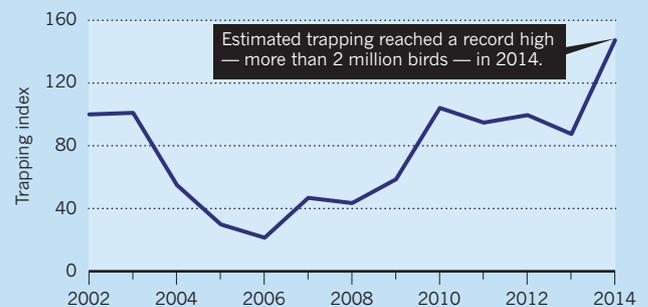
The island’s location also makes it an ideal rest-stop for migratory birds. Nearly half of the bird species from Europe, North Africa and the Middle East are thought to use the island as a migratory staging post as they fly south in the autumn, and back again in spring. These include common birds such as sparrows and the European robin (*Erithacus rubecula*), as well as threatened species including the barn owl (*Tyto alba*), common

## TRAPPED IN CYPRUS

Cyprus is a key stop for migratory birds and a hotspot for illegal bird trapping. Surveys estimate that trapping is on the rise.



## Autumn trapping activity



kingfisher (*Alcedo atthis*) and European turtle dove (*Streptopelia turtur*). All of these creatures have been found in the trappers’ nets, as have some threatened, non-migratory, endemic bird species such as the Cyprus warbler (*Sylvia melanothorax*) and the Cyprus wheatear (*Oenanthe cyprica*).

The practice of trapping dates back to a time when birds were among the few easily found sources of protein on this arid island. Originally, *ambelopoulia* would have been a plate of blackcaps (*Sylvia atricapilla*), but the dish has extended to include 22 species of songbird. The traditional trapping method is to ensnare birds in trees with strategically placed ‘limesticks’ — twigs coated in a goo of mud mixed with Syrian plum juice. But in 1974, laws were introduced to ban non-selective capture methods, including limesticks and mist nets. Bird trapping is also illegal under the European Union (EU) Birds Directive and the Convention on the Conservation of European Wildlife and Natural Habitats (known as the Bern Convention), both of which Cyprus has adopted.

The practice never stopped. Many Cypriots argue that bird trapping for *ambelopoulia* is a tradition and a right, and it has become a highly emotive issue. In the Famagusta district, raids on restaurants and arrests related to bird trapping have sparked public protests, and some politicians either covertly or overtly support it. Last December, Evgenios Hamboulas, Famagusta member of parliament for the incumbent Democratic Rally party, posted a photo of himself on Facebook seated in front of a plate of songbirds with the caption: “Soon in our restaurants! Happy holidays!” The post received nearly 600 likes in 5 days, and condemnation from his party.

Conservation groups believe that bird trapping is rising fast; last year’s BirdLife Cyprus report said that the practice had reached “industrial scale”. Trappers rip out the island’s native scrub bushes, then plant and irrigate lush, bright-green acacia trees that attract birds. They cut corridors through the groves and string mist nets across them from poles.

## DNA identifies baked birds

A DNA technique used to identify the provenance of foods is being turned into the latest crime-fighting tool to tackle illegal bird killing in Cyprus.

About 22 bird species are served up illegally by Cypriot restaurants in a traditional cuisine called *ambelopoulia* (pictured). The hope is that DNA barcoding — a technique that uses DNA sequences to identify a species — can show whether a restaurant owner is passing off illegally trapped birds as chicken or another meat during a raid. Proof that the birds being eaten are protected species might help to build a stronger case to prosecute lawbreakers.

The project is a three-year collaboration between researchers at the University of Pisa, Italy, and the University of Cyprus, Nicosia, as well as the Ministry of the Interior's Cyprus Game and Fauna Service and the conservation group BirdLife Cyprus. So far, the team's unpublished work has shown that sequences from part of a single gene (for cytochrome c oxidase) are enough to distinguish 81 bird species. This worked even when the DNA was extracted from meat baked at 90°C, and cooked with salt or vinegar — a method that matches local gastronomy but that could degrade the DNA. "[It was] prepared in a particular way so we would be sure our DNA investigations would be effective," says Filippo Barbanera, a zoologist at the University of Pisa.

The Pisa team has helped to set up a molecular-genetics lab at the University of Cyprus to do the DNA analyses. It has also trained two game-service officers, so that they can testify about the forensic DNA evidence in court. So far, the method has been used in two cases that are pending court, says Panicos Panayides, an officer at the game service in Nicosia. "We have a new card to be played to stop, or to try to reduce, the rate of illegal trade and consumption of birds in Cyprus," says Barbanera. **S.B.**



When Savvas, Roger and I stopped at a well-known trapping hotspot, the evidence was everywhere: metal poles were concreted into bases made of empty tyres; black irrigation pipes criss-crossed the dusty earth; old carpets covered the ground to stop vegetation growing where the nets hang.

Earlier in the trip, we found an MP3 player high in an acacia tree broadcasting a repetitive birdsong — a 'tape lure' used to attract the birds. Nearby, a red-backed shrike (*Lanius collurio*) and a sparrow both flailed frantically, their feet and wing tips glued onto limesticks balanced high in the tree.

### DEATH TOLL

Conservationists first started systematically monitoring the extent of bird trapping in 2002, using a protocol developed by BirdLife Cyprus and the United Kingdom's Royal Society for the Protection of Birds,

in consultation with the Cyprus Game and Fauna Service (part of the Ministry of Interior) and the British SBA police. The figures showed an initial dip in trapping around the time that Cyprus acceded to the EU, then an upward trend from 2007. But the 2014 trapping figures, published last year, caused a particular stir.

The 2 million birds that BirdLife Cyprus estimated were captured during the previous trapping season was the biggest jump since monitoring had begun. The report also broke down trapping trends by jurisdiction, and found that the SBAs accounted for much of the increase. It estimated that 900,000 birds were killed there — even though the regions take up only 3% of the land — and that there had been a 199% increase since 2002. By contrast, the Republic of Cyprus had seen a downturn in illegal trapping. (Bird killing is not thought to be a major problem in Northern Cyprus.)

The record-breaking numbers prompted criticism and headlines, and led some conservationists and media to imply that the British authorities were turning a blind eye to trapping so as not to upset the local community. The SBA Administration told BirdLife Cyprus that it "does not accept the survey findings" and questioned some of the figures in the report. According to people at the July meeting, the administration was particularly concerned with how the estimates were reached.

The main trapping survey is carried out over a six-week period in the autumn migratory season — also the main bird-hunting season. The surveillance team regularly visits 60 sites, each one kilometre square, that are deemed prime trapping territory and assigns them one of five categories on the basis of the scale of mist netting that it observes — from 'active set net' (where trappers have left a net unfurled on poles), to 'prepared' (where undergrowth has been freshly cut to produce a corridor, but no nets are present), to 'clear' (areas with no evidence of trapping).

From these data, the team estimates how many birds are killed in the region and season overall. To do this, it must make assumptions, such as the number of birds caught in a net each day and that bird migration is relatively constant, when in reality it occurs in waves. "We always say that our estimate of numbers caught is full of assumptions," Papazoglou says. "It needs to be read with a lot of caveats."

One of the major contentions of the SBAs is over the 'prepared' category, Johnston says — because deciding whether an area is about to be used for trapping is to some extent subjective. And others have expressed concerns about the accuracy of the estimates. "We have some doubts over the specifics of the monitoring and the exact numbers," says Panicos Panayides, an officer at the Cyprus Game and Fauna Service in Nicosia.

The July workshop was convened to address these methodology issues. BirdLife Cyprus invited Johnston, her colleague Nick Moran, who runs a major British bird survey, other bird-monitoring experts and representatives of the SBAs. After the workshop, Johnston and Moran advised BirdLife Cyprus to do away with the 'prepared' category and to increase the number of squares sampled within the SBAs, among other recommendations. BirdLife Cyprus will adopt these in its 2016 analysis, which should be published this spring. In a statement to *Nature*, the SBA Administration said that it did not wish to comment on the methodology used previously, that "all groups are working together to refine the recommendations produced by the BTO, and that "it is imperative that we continue to work together to counter the practice [of bird trapping]".

But even with some adjustments, the trapping figures still jumped between 2013 and 2014, says Johnston. "The [new] equation slightly reduces the estimated number, but not by much, by about 10%." And the year-on-year trend towards increased trapping is sound, she says, because the monitoring methods have been consistent over time. If anything, she thinks that BirdLife Cyprus's estimated numbers are "conservative". On the basis of previous studies, the group estimates that about 20 birds are captured in each net per day. But this figure could be much higher if, as is common today, trappers use

taped songs to attract birds. One study<sup>2</sup> estimated that such lures can increase the number of birds flying into traps by up to 13-fold.

Elsewhere in the world, hunting is thought to be playing a part in the demise of even common bird species. Last year, researchers warned that a highly abundant Eurasian bird, the yellow-breasted bunting (*Emberiza aureola*), had lost as much as 95% of its population in the past three decades or so and was close to extinction in parts of its range. One major driver is thought to be the trapping of birds in China, where they are served as an expensive delicacy<sup>3</sup>.

Accurately measuring the extent of bird killing is important if researchers and conservationists are to gauge the damage being done to bird populations, and to encourage efforts to clamp down. But Johnston says that getting rock-solid data is extremely difficult — particularly when visiting the monitoring sites is fraught with danger. “If the trappers had to fill in a form and say how many birds they caught on different days — we could do a great analysis,” she says.

Runge says that low-level hunting of common species may not have a huge impact on populations. “For other endangered species, where only a few individuals are left, it can be really critical.” And whatever the precise numbers, all the agencies involved agree that bird killing in Cyprus needs to be tackled. The question is, how.

### POLITICAL SENSITIVITIES

Jim Guy, divisional commander of the eastern SBA police, is polite, charming and hard as nails. I met him at the police station in Dhekelia, a cluster of low-lying buildings behind a wire fence set off the road, a few kilometres from the city of Larnaka. He’d originally come from Glasgow on a 3-year posting, but has ended up staying for 17.

“As far as the bases themselves are concerned, there’s no denying it’s one of the main trapping areas,” he says. But Guy seems aggrieved about the criticism aimed at the SBAs since BirdLife Cyprus’s report, and says that lax enforcement is not to blame. Rather, he says, the eastern SBA — and especially the promontory of Cape Pyla — is a target for trappers because it is a key stopping point in the flight path of migratory birds. “Cape Pyla in particular has no buildings or houses or anything to deter, or put off birds, so it’s an ideal situation.”

Guy says that his team takes a three-pronged approach to tackle trappers: prevention, education and enforcement. “To some extent, enforcement is an Elastoplast,” he says. It might catch some trappers, but the practice will continue as long as there is demand for high-priced *ambelopoulia* from diners and the restaurants that serve it — and these lie almost entirely in the Republic.

Stopping that demand is extremely difficult, Guy adds. “The illegal practice in some cases is overtly or very often tacitly supported by people in very high political and administrative positions.” What’s more, officers trying to tackle trapping can find themselves threatened or worse. “In the UK, you can go home at night and you don’t have to think about your home or your family being attacked,” says Guy, who has had officers seriously assaulted while dealing with trappers.

His sense of frustration is shared by Panayides. The walls of his office are lined with pictures of birds, and an EU Birds Directive poster perches above the table. Panayides says that there have been at least 30 cases in the past decade in which game-service officers responsible for wildlife enforcement in the republic were harassed by trappers. “We’ve had people put bombs in the private cars of game wardens, and cases where the houses of game wardens have been burnt down,” he says.

Even when trappers are caught, Panayides says, the weak punishments imposed by courts are not effective deterrents. Technically, Cypriot law allows a first-time trapper to be jailed for up to 3 years, or fined up to €17,000. In reality, most get off with a fine of a few hundred euros. Panayides tells of one poacher whom his team has caught and prosecuted eight times over the past decade. “What else can we do as a department?” he says disconsolately.

The fight escalated last year. In May, a previously agreed plan to deal with bird killing was passing through Cyprus’s Council of



Blackcaps (top) and European bee eaters are both trapped in nets in Cyprus.

Ministers when the government added a last-minute clause that would allow selective hunting of blackcaps for *ambelopoulia*. The move caused an outcry in environmental organizations, because any method used to capture blackcaps would inevitably catch other species and is in breach of the Birds Directive. In August, the altered plan was rejected by the European Commission in a letter to the Cyprus government, and observers are now waiting to see how the government will respond.

Meanwhile, authorities in both the republic and the SBAs are stepping up efforts to curb bird killing. The republic authorities are looking at the use of a genetic technique known as DNA barcoding to identify the birds served up at restaurants (see ‘DNA identifies baked birds’), and the SBA Administration says that it removed 11 football-pitches’ worth of planted acacia from the central poaching area of Cape Pyla last summer. The removal met with demonstrations, and people sat in the dirt tracks to stop the clearance contractors. In the area where we encountered the knife-bearing poacher, the monitoring team now enters only if it has a police escort. The conservationists and the poachers have reached “the top-end of the fight”, says Savvas, who has been monitoring trapping on the island for nearly five years.

Surveillance and enforcement will only go so far: most parties agree that the only real way to tackle bird killing is through education and social change. “The general public has to recognize that this is not correct,” says Panayides. “Not just legally, but also morally and socially.” Papazoglou, too, is realistic about what needs to be done. “If we don’t get the minds and hearts of people to change — we will never change it,” she says. ■

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1. Runge, C. A. *et al. Science* **350**, 1255–1258 (2015).
2. Schaub, M. *et al. Auk* **116**, 1047–1053 (1999).
3. Kamp, J. *et al. Conserv. Biol.* **29**, 1684–1694 (2015).