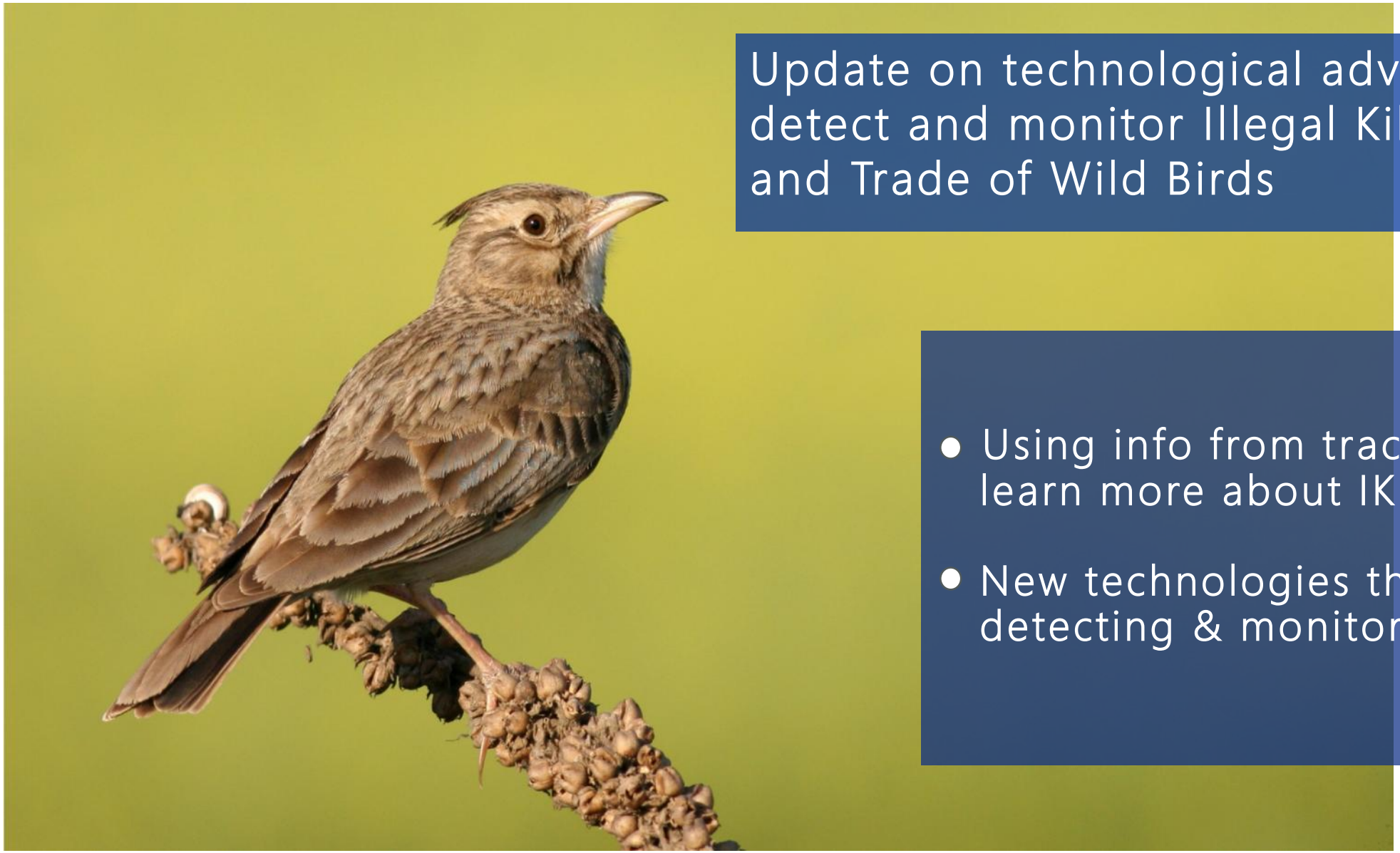
Update on technological advances to detect and monitor Illegal Killing, Taking and Trade of Wild Birds

BirdLife International: Vicky Jones

Contributions from Luke Ozsanlav-Harris, Juan Serratosa Lopez, BirdLife partners and co-authors

Joint Meeting of Bern Convention SFPs and CMS MIKT on Illegal Killing, Taking and Trade of Wild Birds

13-15 May 2025, Bonn, Germany



Update on technological advances to detect and monitor Illegal Killing, Taking and Trade of Wild Birds

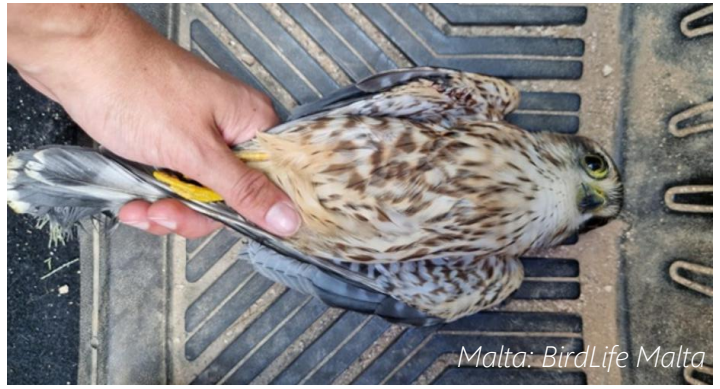
- Using info from tracked birds to learn more about IKB
- New technologies that can help in detecting & monitoring IKB

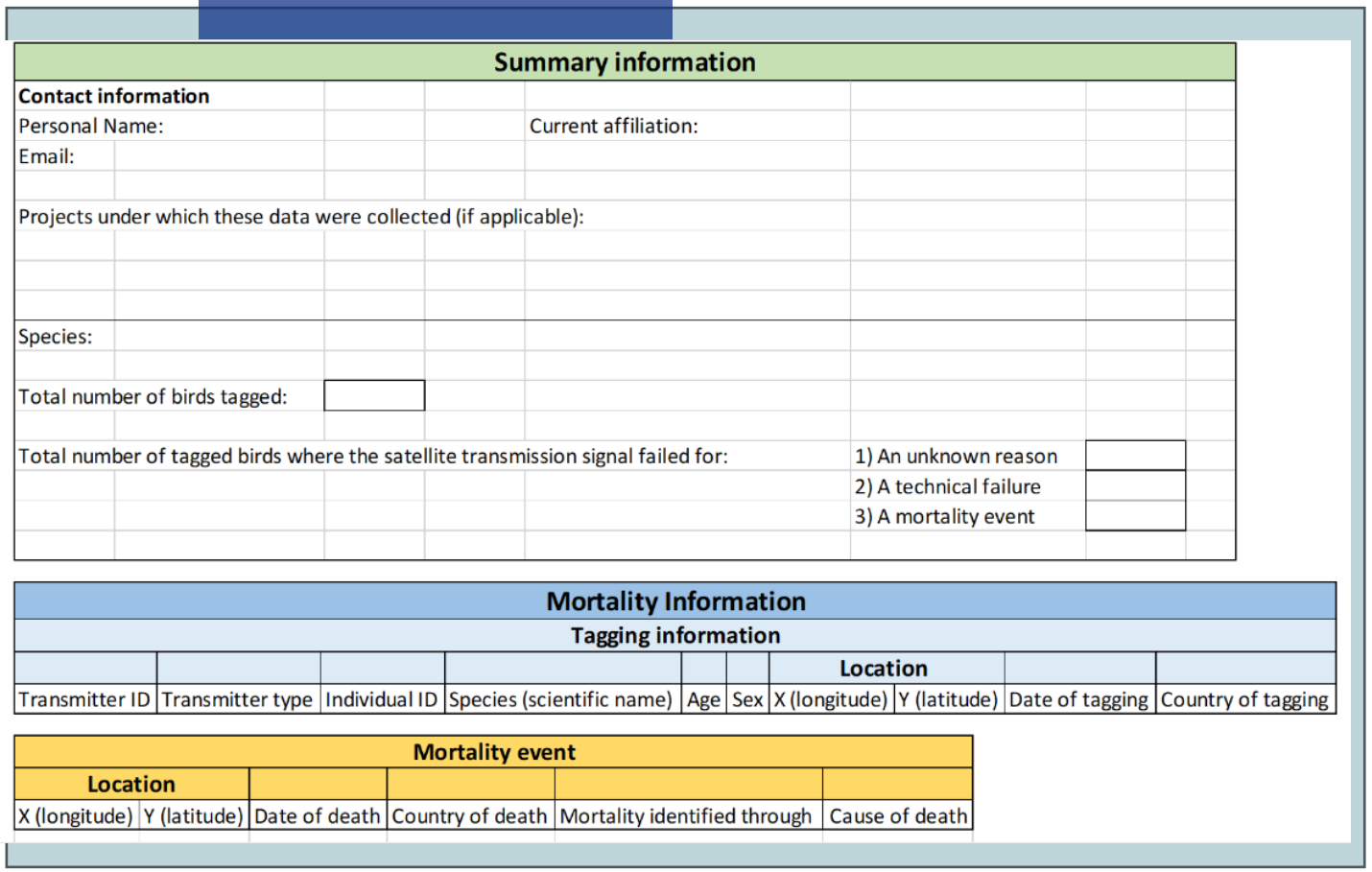
Identifying causes of mortality using tracking data

Identifying causes of mortality using tracking data

- Continuing increase in use of tracking technology
- Focus often on movement or other aspects of ecology
- But can deliver important information on mortality especially when multi-species datasets compiled
- Tracked birds as sentinels of threats in the flyway
- What tracked migratory birds die from indicates prevalence and relative importance of different threats


Lebanon: Fouad Itani


Malta: BirdLife Malta



Summary information

Contact information			
Personal Name:		Current affiliation:	
Email:			
Projects under which these data were collected (if applicable):			
Species:			
Total number of birds tagged:			
Total number of tagged birds where the satellite transmission signal failed for:		1) An unknown reason	
		2) A technical failure	
		3) A mortality event	

Mortality Information

Tagging information

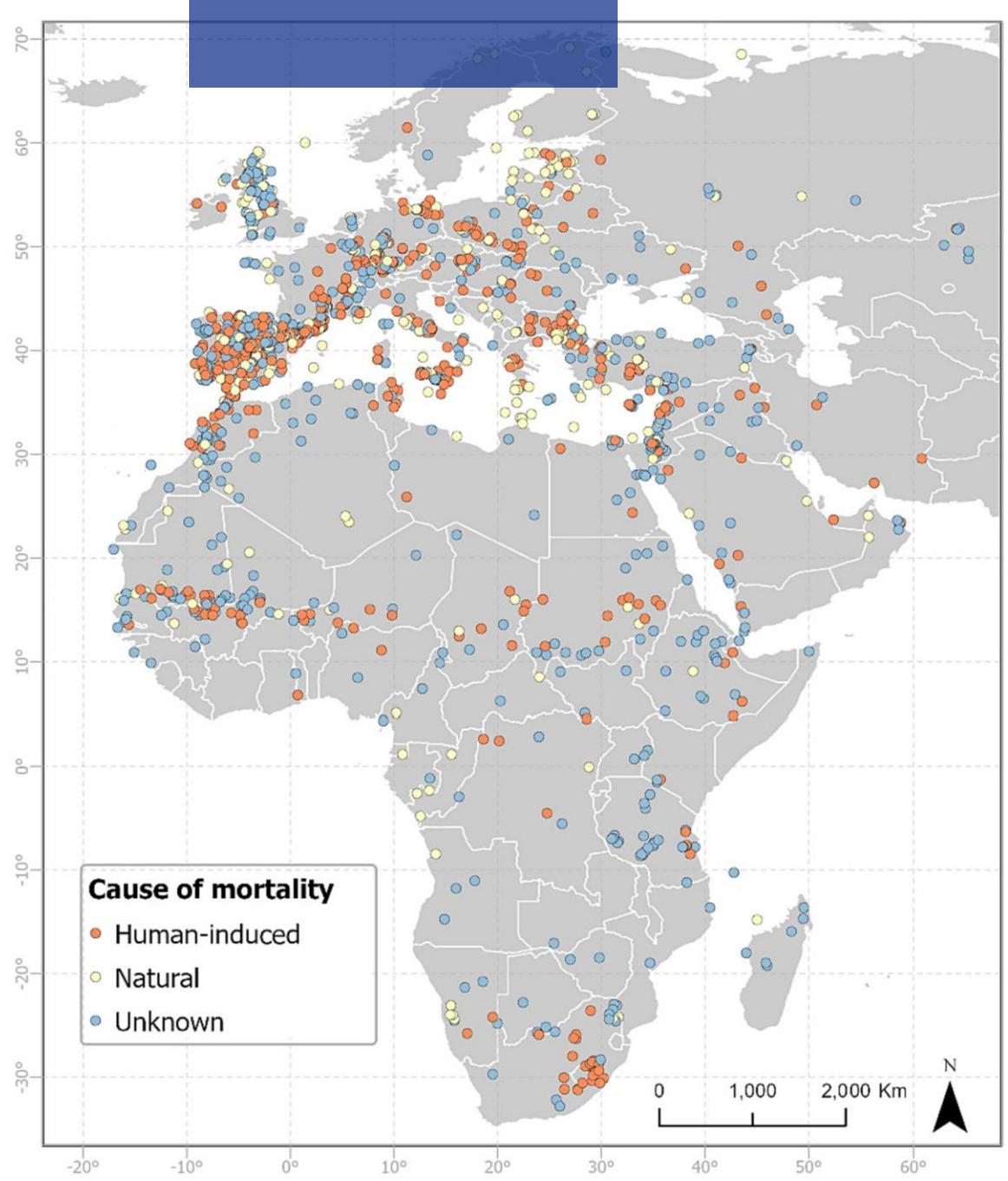
						Location			
Transmitter ID	Transmitter type	Individual ID	Species (scientific name)	Age	Sex	X (longitude)	Y (latitude)	Date of tagging	Country of tagging

Mortality event

Location					
X (longitude)	Y (latitude)	Date of death	Country of death	Mortality identified through	Cause of death

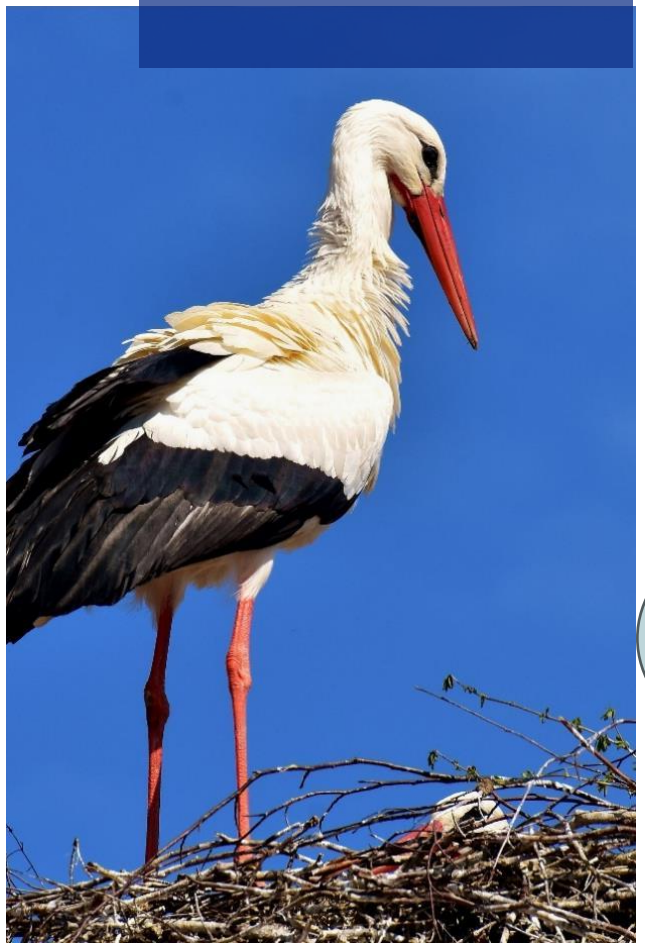
Serratosa *et al.* (2024) Tracking data highlight the importance of human-induced mortality for large migratory birds at a flyway scale. Biological Conservation. 293 https://doi.org/10.1016/j.biocon.2024.110525

- Major collaboration led by BirdLife
- Involved researchers throughout flyway
- Tracking sp large migratory birds - storks, cranes, raptors
- More than 160 co-authors
- Filled out simple info for each event
- 1704 mortality events from 45 species 2003-2021



Mortality in the flyway

- Map shows distribution of mortality for tracked storks, cranes and raptors
- Birds were tagged in 48 countries
- Mortality events recorded in 91 countries



Tag issues or mortality?

- Events where tag transmitting from static location or tag stops transmitting

Technical failure of tag

Tag fallen off bird

Unknown, no further info

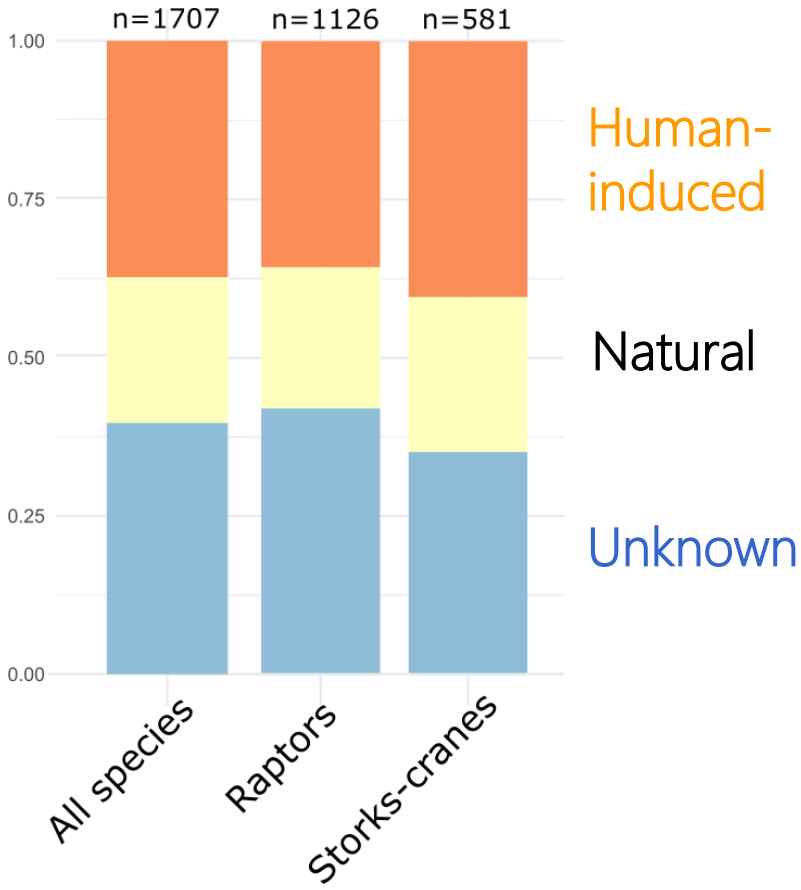
Mortality

Human-induced

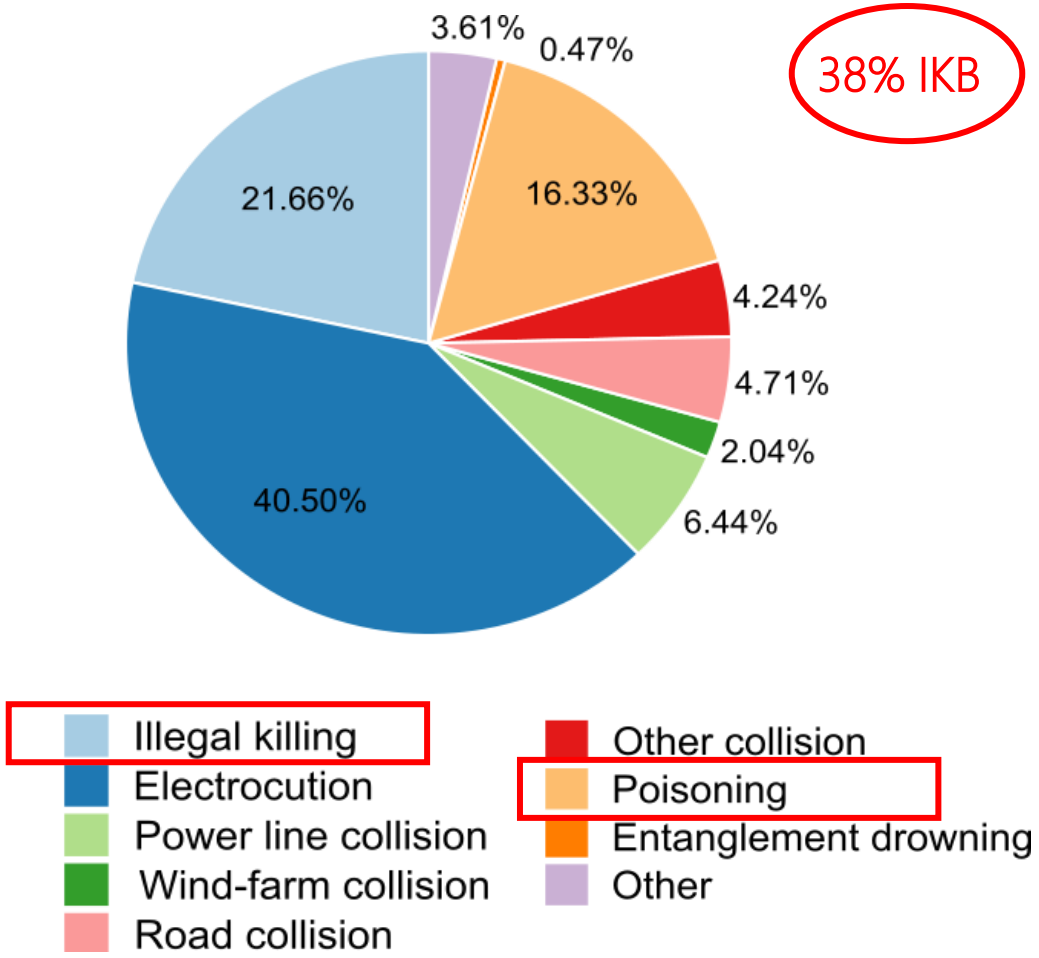
Natural cause

Unknown cause

Overall causes of mortality



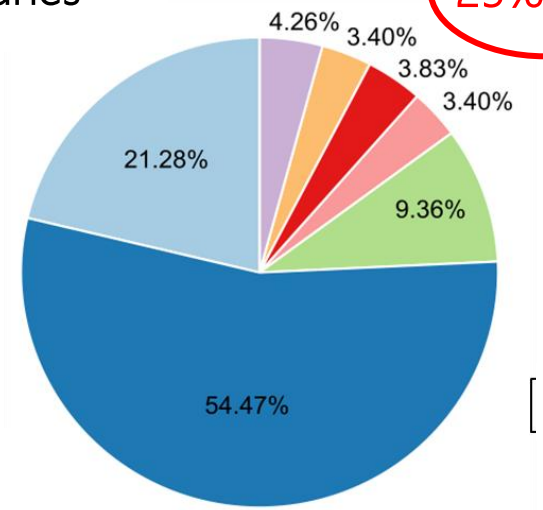
Human-induced mortality



Causes of mortality by taxonomic groups

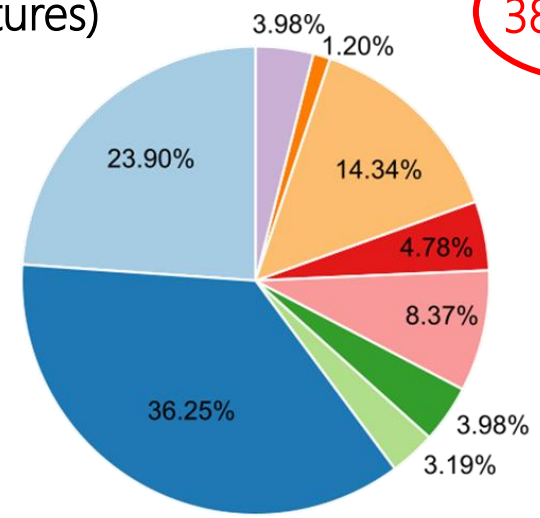
Storks & Cranes

25% IKB

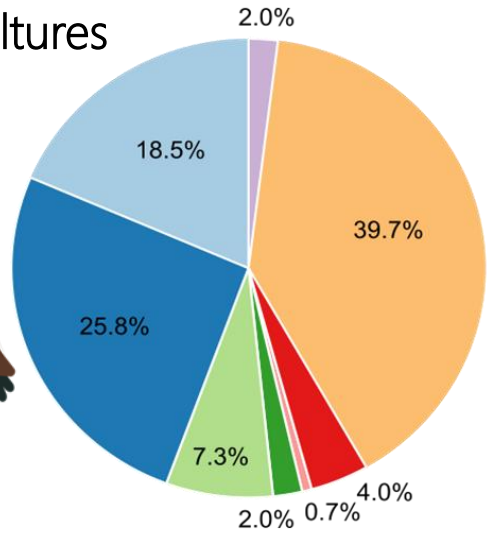


Raptors (excl. vultures)

38% IKB



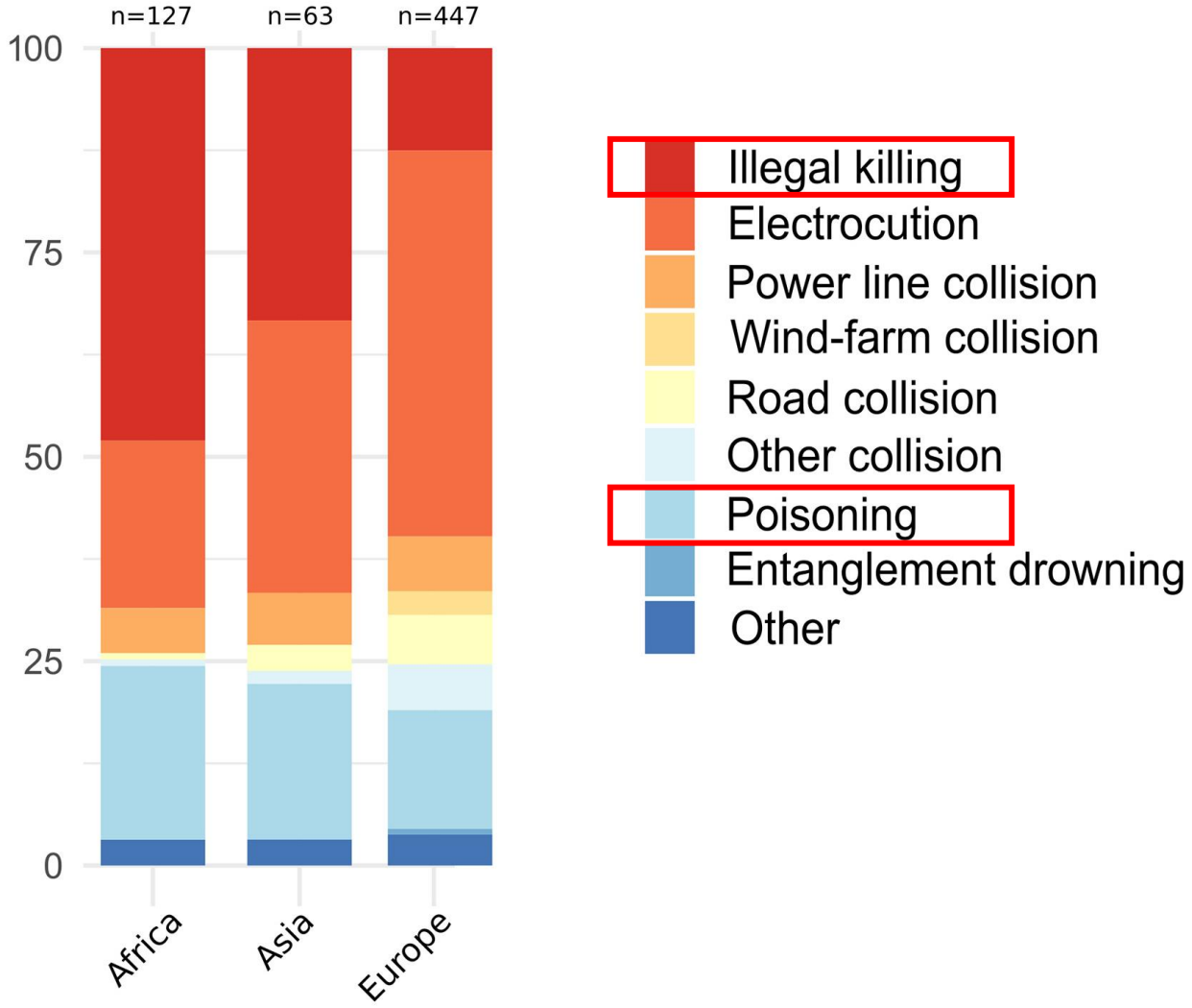
Vultures



58% IKB

- Illegal killing
- Electrocution
- Power line collision
- Wind-farm collision
- Road collision
- Other collision
- Poisoning
- Entanglement drowning
- Other

Overview human-induced mortality by region



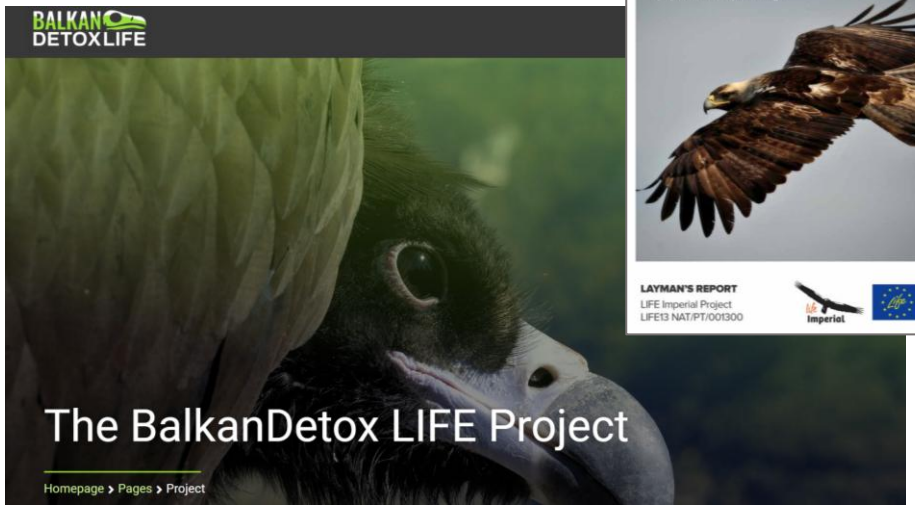
- 69% human-induced mortality events in Africa caused by IKB (incl. poisoning)
- 52% in Asia (Middle East and C. Asia) caused by IKB (incl. poisoning)
- 27% in Europe caused by IKB (incl. poisoning)

Conclusion

- From the deaths where cause could be established in the flyway IKB was responsible for 38%, second only to collision/ electrocution with energy infrastructure
- No evidence that human induced mortality was reducing relative to natural mortality over the time period 2003-2021
- Real world evidence that IKB is a significant cause of mortality in the flyway for large migratory birds, many of the species in study already threatened
- Very valuable to collect mortality info from tracking

Large-scale investment in conservation including threatened species

IKB can undermine species recovery investment elsewhere in flyway



Other uses of tracking info in IKB detection/prevention/response

- Previous example using multispecies tracking data to learn more about causes of mortality and when and where IKB happens at flyway scale
- Single sp -used in the UK to show that rates of Golden Eagle mortality are higher over managed grouse moors –pointing to perpetrators of IKB
- Rapid response eg/ Balkan Detox Life project-monitoring tracked Griffon Vultures. Body temp or not moving -get alert, do field check, save injured/ weak bird or retrieve carcass for postmortem/ info for prosecution

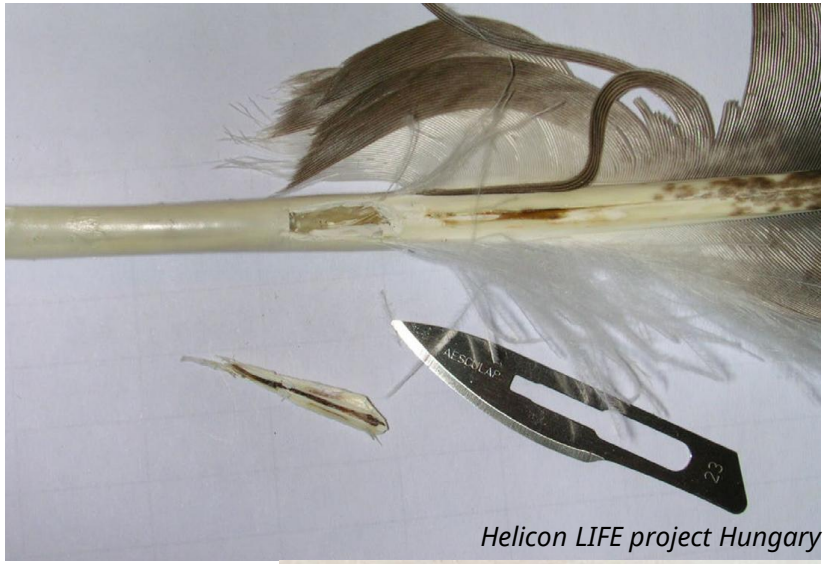
Other technologies being used in detecting/ addressing IKB

Drones/Aerial Surveys

- Drones, or Unmanned Aerial Vehicles (UAVs), can provide quick, cheap and easy method of surveying large or hard to access areas (subject to legislation)
- Drones can be used to locate or count poachers or traps, track movements and record habitat modification/ structures associated with IKB
- Can combine with other tech such as thermal imaging, to record activity at night or with satellite tracking to help check on tagged birds in remote or inaccessible locations
- Top image-BIOM identifying illegally dug ponds in ornithological reserves in the Neretva delta, Croatia
- BirdLife Malta using drone to detect inaccessible finch trapping sites, reported to the police for investigation

DNA analysis

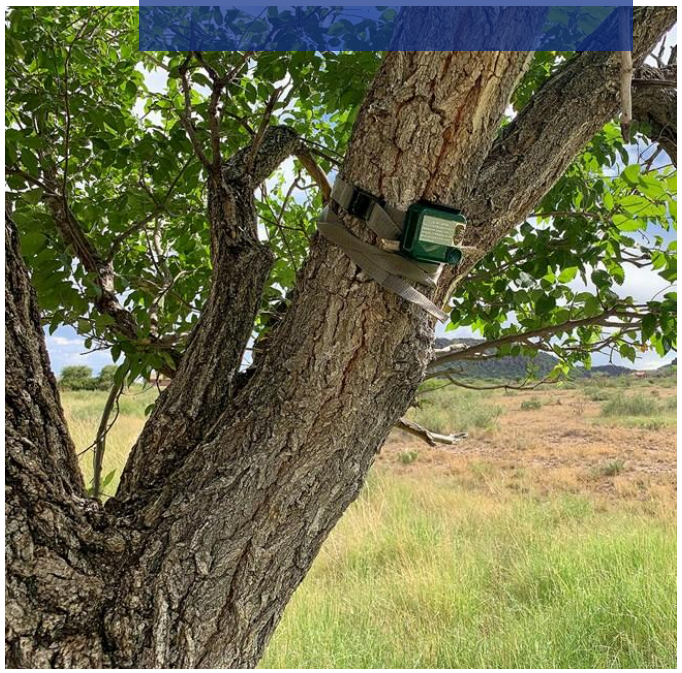
- DNA (blood, tissue, feather, faeces) can be used in identifying and evidencing IKB
- Eg/ DNA from feathers shed at nest sites revealed high turnover of adults at Eastern Imperial Eagle nests. Further investigation –high incidence poisoning (Helicon LIFE project)
- Dimitriou et al. (2017) DNA barcoded confiscated bird species in Cyprus, as reference so that prepared /cooked birds could be identified providing forensic evidence in cases where restaurants serving wild birds
- DNA can help in determining whether birds confiscated in trade are one species or another and whether they originate from the population claimed (eg/ captive bred or wild)

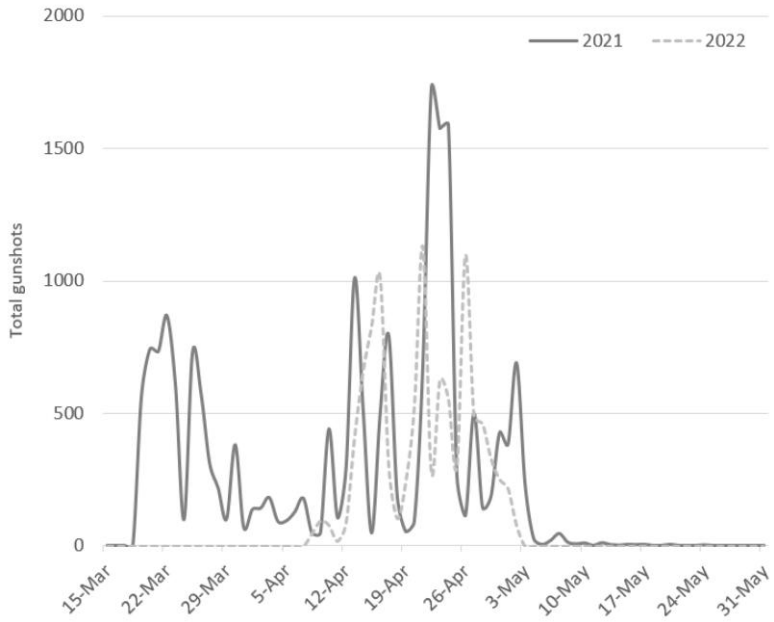


Helicon LIFE project Hungary


David Tipling/Birdphoto.co.uk

Acoustic Monitoring





- Passive Acoustic Monitoring (PAM) –put out a device for several weeks/ months (if battery replacement) and can detect and record gunshots; can be hidden (shoebox size)
- Useful where clear distinction in time or place where hunting allowed, data can be shared with stakeholders/ verified
- Can filter out background noise, needs some calibration to test how far shots can be detected in the landscape
- HOS & Forest Research Institute (Astaras *et al.* 2023) used on Ionian Islands, Greece. All spring hunting is banned, but Turtle Dove illegal spring hunting issue
- Patrols reported only isolated shots but the PAM detected >14,000 shots from just one of the monitoring locations in one spring migration period – across 6 locations 34,000-57,000 Turtle Doves estimated to be shot in one spring

Use of remote cameras for surveillance

- Remote cameras can be used for surveillance
- Small and discreet they can be hidden
- Can be used covertly to detect illegal activity and capture evidence without enforcement staff needing to be present
- Can capture images at intervals or be triggered by movement
- Pictures show their installation and use for poachers in Turkey
- Sovereign Base Area (SBA) Police worked with RSPB and BirdLife Cyprus using covert cameras at key illegal trapping hotspots to gather evidence and successfully prosecute perpetrators

Best practice guide for monitoring IKB

Case studies

- Mobilising **volunteers** for IKB monitoring in Lebanon (SPNL/BL Lebanon)
- Removing **poaching** **infra** (Asso
- Briefi in Ma
- Develo**ping a volunteer network** to monitor **quail poaching** in Croatia (Association Biom/BLCroatia)
- Monitoring illegal **mist-nets** in Cyprus (BirdLife Cyprus)
- Surveillance for illegal use of **poison** in Spain (SEO/BL Spain)
- **Acoustic Recording** Units to detect **shooting** in Greece (Hellenic Ornithological Society/BL Greece & FRI
- Monitoring illegal take in **hunting bags** in Croatia (Croatian Society for Bird and Nature protection)
- in Hungary (MME/BL Hungary)
- **Satellite transmitters**, prevention of poisoning & **DNA** sampling of Eastern Imperial Eagles in Hungary. (MME)
- Monitoring a **bird market** in Jordan (RSCN/BirdLife Jordan & RMCSJ)
- Using monitoring results to **change attitudes** on IKB (LIPU/ BL Italy)
- Collecting information from **hunters/trappers** in Egypt (NCE/ BL Egypt)
- Protocol for recording **incidental IKB observations** in the UK (RSPB/ BL UK)
- **cution** atch
- he illegal **trapping** in Malta (BirdLife Malta)
- **Drones** for **nest protection** peregrine falcons in Northern Ireland
- **DNA barcoding** of bird species in Cyprus and **Using covert surveillance** (BirdLife Cyprus).
- **Analysing magnitude of raptor shooting** (Batumi/ BL Georgia)

https://www.cms.int/en/page/monitoring-ikb

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