

**Illegal wildlife trades and ecological consequences:**

**A case study of the bird market in Fereydunkenar, Iran**

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**Abstract**

Illegal bird hunting in and around the Fereydunkenar International Wetland in Iran has a long history but one with serious ecological consequences. Such hunting has involved the mass killing of critically endangered species—such as Siberian cranes, white-headed ducks, geese, lapwings and wintering raptors—and has caused damage to regional ecosystems. The outcome has been described by conservationists and regional news commentators as a “bird genocide.” This study addresses some of the significant problems created by the illegal bird market of Fereydunkenar and explores the reasons for both the actors’ participation and the market’s resilience. The paper draws on original fieldwork—data from qualitative, in-depth interviews with twenty-one participants actively involved in this bird market. Actors provided various justifications and explanations for their activities, such as food and income, the ineffectiveness of formal controls alongside the supportiveness of informal social norms, and the ability to create an enterprise and attract capital based on simple commodification of nature. The case study illuminates how a traditional practice and a narrowly-focused set of behaviors persist despite the impact of related cascade effects causing harm to ecosystems that push some species to the edge of extinction. The paper therefore serves as an interdisciplinary contribution to green criminology and conservation criminology, as well as to ecological sciences, more generally.

**Keywords**

Bird killing; green criminology; hunting; illegal wildlife trade; Iran

## **Introduction**

The commodification of “nature”—the environment and wildlife—is, on the one hand, as old as commerce and markets. At the same time, from the early twentieth century onward, such commodification has been expanding in scale and profitability. As Slater and Tonkiss (2013) argue, the major features of modern society—division of labor, commodification, monetization—have underpinned a new kind of market-based order. Opportunism and profit-seeking manifest themselves in various ways, involving the commodification of diverse aspects of human and nonhuman life and the creation of new markets (Brisman and South 2014, 2020). At the same time, however, these expressions of human control and exploitation of nature are damaging biodiversity and threatening the vitality of ecosystems (Horton and Horton 2019; Kolbert 2014; Sollund 2012; Savage 1963).

According to various commentators, the illegal hunting and trade of wildlife, illegal logging, and pollution (air, soil, water) are the main instances of environmental crimes (Walters 2010; White 2013; Brisman and South 2017; Wyatt 2022). INTERPOL (2014) describes five categories of such crime which are among the most prevalent kinds of environmental offenses in the world: illegal trade in wildlife; illegal logging; illegal release of chemicals that destroy the ozone layer; illegal dumping of hazardous wastes; and illegal, unreported or unregulated (IUU) fishing. In recent years, the growth of the illegal wildlife trade and ineffectiveness of controls has received increased attention (e.g., Moreto 2018; Sollund 2019).

The study of crimes and harms within the vast range of relationships between humans and nonhuman animals has been of interest within the arts and sciences (Beirne 2018) and to histories of land use and conservation (Jacoby 2001). For the study of the sociology of deviance and criminology, Bryant (1979:412) identified the need to explore what he called “zoological crime” and noted that such violations “may well be among the most ubiquitous of

any social deviancy.” This area of work has been developed substantially in a series of subsequent works (e.g., Beirne 2002; Sollund 2019; van Uhm et al. 2021; Wyatt 2013, 2022), demonstrating that illegal wildlife trades have a range of significant impacts affecting environments (e.g., loss of biodiversity, extinction of rare species, disease transmission), humans (e.g., risk to health and to personal livelihoods), and national security (e.g., increase in corruption, organized crime, terrorism). Illegal wildlife trading therefore has wide-ranging ramifications—in the sense of complex and unwelcome consequences—at local, regional, national, and international levels. Illegal hunting, smuggling and trade also have a profound effect on rare animal and plant species which are in danger of extinction (Organisation for Economic Co-operation and Development [OECD] 2012; Zabyelina 2014; see also Kolbert 2014; Parchizadeh and Belant 2020). The consequences of hunting migrating birds illustrates this complexity well and this paper presents an original case study of illegal bird hunting in and around the Fereydunkenar International Wetland in Iran. This mass killing of critically endangered species—such as Siberian cranes, white-headed ducks, geese, lapwings and wintering raptors—has caused associated damage to regional ecosystems and has given rise to related illicit activities (see Parchizadeh and Belant 2020). The outcome has been described by conservationists and regional news commentators as a “bird genocide.”

In the next sections, we provide a literature review expanding on the challenges and conservation crises presented by illegal wildlife trades, in general, as well as some contextual reports related to the case study. Next, we offer an outline of the conceptual/theoretical framework employed for the analysis of the data, before turning to a description of the case study of the illegal market in the city of Fereydunkenar, capital of the county of the same name. This is followed by the presentation of methods, findings, and discussion.

## **Literature Review: Drivers of Illegal Wildlife Trades**

Criminological studies of the illegal wildlife trade have tended to focus on the causes (or drivers) of these trades, their consequences or impact, and criminal justice responses. As noted above, illegal wildlife trades pose major threats to the conservation and protection of biodiversity, to the sustainability of plant and animal species, and to the vitality of ecosystem functions (see, e.g., Challender et al. 2015; see also Kolbert 2014; Parchizadeh and Belant 2020). Given the focus of this paper, in this section, we review studies of different drivers of illegal wildlife trades.

Various socio-economic conditions or factors can influence the emergence or perpetuation of illegal wildlife markets. For example, Wyatt and colleagues (2018) show that Southeast Asia and China are central points for the supply and demand of certain species of wildlife, and that corruption plays an important role in the trafficking of ivory, reptile skins, and live reptiles from, through, or to Asia. van Uhm and Siegel (2016) conducted research on the illegal trade in black caviar in Russia, finding that scarcity, high prices, social instability, and corruption in countries of origin can influence the formation and persistence of the illegal caviar trade. This study complements the work of Zabyelina (2014), who investigated trends in the development of illegal markets in black caviar using document analysis and interviews with actors in the illegal trade in Russia. Her findings revealed that the gap between the poor and the rich, and the abundance or lack of resources in a region, along with liberal or non-liberal enforcement of the law, can all influence the illicit caviar trade. This is consistent with the conclusions of other studies that provide evidence of a relationship between high levels of unemployment, poverty, job insecurity, lack of awareness of the importance of the environment and wildlife, and the likelihood of committing such environmental crimes (e.g., Cao Ngoc and Wyatt 2013; Phelps and Webb 2015; Wyatt 2009, 2011, 2014). These are all factors relevant to the case study presented here.

Illegal wildlife trades have also emerged, continued or flourished as a result of legal factors, such as insufficient laws to protect the environment or ineffective implementation. Sosnowski and Petrossian (2020), using secondary data on wildlife body-parts used in the fashion industry in the United States (U.S.), showed that the number of incidents identified increased over the period of 2003 to 2013 but that the number of associated items seized decreased over this time. This reduction could, perhaps, be explained by strict enforcement of laws related to wildlife trade and the increase in active-duty wildlife crime inspectors at U.S. ports during the 2003-2013 period (from 94 to 140 officers). If this is the case, it is worth contrasting with a study by Maher and Sollund (2016), who investigated law enforcement of illegal wildlife trafficking in Norway and the United Kingdom. Their findings showed that outdated domestic legislation, inconsistent laws and regulations, inadequate resources to investigate offenses, and weak sentences for violations underpinned failings of environmental law enforcement in both countries. This echoes the results of other studies (e.g., Symes et al. 2018; Wyatt 2016) that concluded that weak enforcement and the low deterrent effects of environmental laws increased the incidence of environmental crimes. Again, these findings are highly relevant to our case study.

Essentially, the studies that we have summarized above indicate that a range of factors—economic incentives, access to networks, weak laws or regulations, anemic law enforcement—can foster markets and sales of wildlife and other commodities (South and Wyatt 2011; van Uhm et al. 2021). Nonetheless, due to the covert nature of illegal wildlife trades and the paucity of comprehensive studies of the factors and features regarding the conditions of their operation, further case studies are required (Symes et al. 2018) and these should be informed by recent directions and developments in “green criminology” and “southern criminology” (Brisman and South 2020; Brisman et al. 2018; Carrington et al. 2018). These perspectives have called for criminology, as a whole, to reflect on and address

cultural bias in the discipline's approach and locations of study (Goyes and South 2017; van Swaaningen 2021). In this paper, we—as co-authors from different countries and cultures but with a shared interest in the health and vitality of environments and ecosystems—aim to contribute to addressing these deficiencies by describing the operation of an illegal market in wild birds in a non-Western, Muslim country—the Fereydunkenar region of Northern Iran.

### **Conceptual/Theoretical Framework**

As Brisman and South (2015: 127) note, the application of theory, findings and debates “arising from the ‘mainstream’ literature on crime prevention to the increasingly urgent issue of crimes and harms that damage the environment” can sometimes be “a missing dimension in the rapidly growing field of green criminology.” As we have attempted to illustrate in the previous section, the illegal wildlife trade involves complex phenomena (Nurse and Wyatt 2021; Sollund 2019) that cannot be explained easily by any single criminological theory. While a number of theories, such as market-demand reduction theory, deterrence, strain, routine activity, and differential association, have been significant to developing an understanding of illegal wildlife trading (see, e.g., Mir Mohamad Tabar et al. 2023), we focus here on those most applicable to the illegal bird market in Fereydunkenar.

Reuter (2004) states that the basic principle of *market demand-reduction theory* is that demand for stolen goods in illegal markets is a major driver of theft, and the subsequent sale and purchase of stolen goods. Originally developed by Sutton and colleagues (2001), this approach was applied by Schneider (2008) and Lemieux and Clarke (2009) to the identification of actors (such as hunters, smugglers and consumers) and patterns of activities involved in illegal wildlife trades. In a similar vein, Warchol and colleagues (2003) offered a general classification of actors in illegal wildlife markets namely, initial suppliers, smugglers, traders, and final consumers. Initial suppliers (or hunters) commit these crimes primarily with

the aim of earning a livelihood and making a profit. Traders and smugglers are the second link in the supply chain—individuals or groups who facilitate the movement of products provided by initial suppliers (hunters) to final consumers. Smugglers, in partnership with others, transfer and distribute these products. They sometimes purchase illegal products from hunters, transferring them across borders, for final delivery to consumers.

While theory integration is often challenging (see, e.g., Agnew 2011), even if one is attempting to explain just one category or kind of crime, we suggest that, taking various factors together, involvement in illegal markets may be based on the presence of individuals in financial straits (Agnew 1992; Aghilinejhad et al. 2018; Gandiwa et al. 2013; Mir Mohamad Tabar et al. 2020; Mirrasooli et al. 2019), perhaps with precarious employment, who see opportunities in longstanding illicit but widely accepted roles that can offer income and collaboration without censure. Alongside these participants, profit-seeking entrepreneurs capitalize on the opportunities in illegal markets (Reuter 2004; Sutton et al. 2001). The existence of actor networks at various levels in the market contributes to the continuation and expansion of such illegal activities, while the combination of inadequate implementation of laws and regulations and weak penalties fails to deter wildlife criminals and would-be offenders (Brisman and Carrabine 2017; Paternoster 2010; see also Kurland et al. 2017). The present study considers these factors in describing the operation and continuation of the Fereydunkenar bird market.

### **The Case Study: Hunting and Trading Wild Birds in Fereydunkenar County, Iran**

Although the illegal wildlife trade constitutes a violation of criminal law in Iran, such trade has long-standing roots in Fereydunkenar County in the Mazandaran Province in the north of the country (see Mir Mohamad Tabar et al. 2023; see generally Savage 1963), and despite both “official” reports and news reports that the market serving this trade has closed (IFP



2022), in fact, recent research (late 2022) confirms that market activity remains resilient. Indeed, illegal hunting in the region continues to be undertaken for the purpose of selling to interested buyers in the Fereydunkenar bird market. Based on the data from this study, we identified two main types of such buyers: owners of taxidermy shops who seek beautiful and exotic birds, and those individuals who purchase for consumption.

Two wetlands—Fereydunkenar and Lapoo—are among a small number of such ecosystems in the province and, according to France24 (2015), every autumn, several million migratory birds from various European countries descend on Fereydunkenar. For the birds—and for the humans that care about them—this area of natural biodiversity has become a killing zone. Parchizadeh and Williams (2018) argue that the continuation of this trend in the Fereydunkenar wetlands will lead to the extinction of rare species and the destruction of the ecosystems of countries surrounding the Caspian Sea. As one isolated but dramatic example, since 2007, two of the three known living Western Siberian Cranes in the world have been hunted and killed in Fereydunkenar. Today, only one of these cranes remains alive.

Mansoori (2009) points out that the complexity of the problems created by hunting migratory wild birds in the Fereydunkenar wetlands can be illustrated by considering the implications for the main pillar of the economy of the county: agriculture. The presence of wintering migratory birds has a favorable effect on the ecosystem of this region because the land benefits from the natural fertilizer of the excreta of these birds and the birds serve a key role in controlling pests. This leaves the soil of rice farms more fertile and renders them more productive, resulting in the widely recognized high quality of rice produced in the region. The continued presence of the bird market in Fereydunkenar, however, leads to the increased hunting of birds. This increased hunting ultimately threatens the survival of some species, causing damage to the ecosystem and deleterious consequences for the agricultural economy of the region.

## **Methods**

Illegal wildlife trading is, for obvious reasons, generally covert and involves networks that rely on trust and secrecy. Unsurprisingly, it can be difficult to identify offenders (Enticott 2011) and to collect data (van Uhm 2018). The present study adopted a qualitative research strategy that produced twenty-one semi-structured interviews with actors in the illegal bird market of the city of Fereydunkenar. Data were collected from September to December 2018. Interviews lasted from 30 to 60 minutes. Actors were asked to describe their motivation for engaging in this illegal market.

For this study, we employed snowball sampling—purposive sampling that is used to access people who are difficult to identify (Wong 2015). In such purposive sampling, the researcher identifies a source of information that is related to the field of study (Birks and Mills 2011) and respondents are selected because of background on and experience with the topic. “Key informants” or “gatekeepers” are people whose social position may provide the researcher with special information about people, processes or events (Payne and Payne 2004). In our study, the gatekeepers included important dealers and sellers in the illegal Fereydunkenar bird market, as well as consumers. These gatekeepers did not necessarily occupy important positions in the illegal bird market, but influenced other market actors through their “well-known personality” and reputation in the bird market and the city. Based on our purposive sampling, the actors (including workers, market sellers, and dealers) who had more experience in the bird market were identified by the gatekeepers and were interviewed at the market or in the merchants’ shops. Due to predictable sensitivities and the possible reluctance of merchants to cooperate, a gatekeeper contact was used to enter and conduct interviews in the bird market. All actors were guaranteed confidentiality to protect

them from adverse effects (including criminal prosecution) and, for these reasons, names or specific locations are not given in this paper.

Theoretical saturation criteria were used to determine the number of sufficient interviews. Theoretical saturation means that no new data have been found in the data collection process, allowing the researcher to then categorize the data. When the researcher has identified all the categories and has become assured that the categories are saturated, the researcher stops searching for new, or variations of, data (Glaser and Strauss 1967). In this study, data saturation was achieved with 21 interviews. This means that no new ideas and insights were obtained from increasing the number of interviews. Respondents in a further two interviews were simply providing data similar to that already obtained.

To analyze the data, we employed a coding process comprised of three stages: open coding, axial coding, and selective coding (Corbin and Strauss 1990). In the open coding stage, after we converted the oral interview data into text, we examined the transcripts line by line and identified important concepts by discrepancies and similarities. After open coding, we undertook axial and selective coding. Dey (1993) describes axial coding as a cyclic or spiral process that includes three activities—description, classification and connection. In this study, the primary codes were classified in the form of categories based on the patterns and trends revealed in the data, and a logical connection was established between them. According to Corbin and Strauss (1990), selective coding is the process of choosing the main category, relating it systematically to other categories, verifying the validity of these relationships, and completing the categories that need further modification and development. In this study, the categories were placed in the form of main codes based on their relationship and characteristics.

The reliability of the data was assured based on confirmability—the degree to which the results could be confirmed or corroborated by other researchers. To establish

confirmability, the gatekeeper helped to set up interviews but then two interviewers collected the interview data in parallel. The first and second interviewers collected 11 and 10 interviews, respectively. All stages of data collection, coding and interpretation were specified in advance so that the interviewers could follow a specific and consistent procedure. For example, the first few interviews were reviewed with the two interviewees to determine the method of identifying differences and similarities in relation to the primary codes. We determined that the primary codes could be considered as categories after being repeated several times.

## **Findings**

The majority of the interviewees (about 75%) had received formal education at the level of a high school diploma or below; about 25% had achieved a level above a high school diploma. Participants' ages ranged from 30 to 61 years, with 60% between 40 and 50 years of age. In the Fereydunkenar region, most agricultural activities take place in the first six months of the year, and other activities, such as bird hunting and the bird trade, occur in the second six months (see Savage 1963). The majority of interviewees were farmers and workers who engaged in bird trading in the second half of the year. Some of the interviewees did not have a job, however, except working in the bird market where they were active just as dealers in the market. Among the different actors of the bird market, the "sellers" were the people who either had a shop or who paid rent for a space to be able to sell in the market. These people bought birds from hunters or dealers and sold them to consumers. "Market dealers" do not have shops or do not pay rent to be in the market. They buy birds from hunters and sell them to sellers. Market workers work only for market sellers. They clean the birds and prepare them for sale to the final consumers. None of these actors are hunting birds.

All interviewees were men because only men participate in the activities related to wild birds, such as hunting and buying and selling them. Women are involved only insofar as they consume wild bird meat. The reason these activities are considered “masculine” is due to the patriarchal culture in the region and the perception that women cannot complete these difficult activities. Hunting wild birds is regarded as challenging because hunters sometimes have to stay awake all night in the cold weather of autumn and winter in order to hunt the birds (Mir Mohamad Tabar 2017). As men in the region believe that women are unable to endure such circumstances this means men are the only actors included in the activities of the bird market.

**[Insert “Table 1. Characteristics of interviewees in the study” here.]**

### ***Involvement in the Illegal Bird Market***

We designed the study to explore the conditions that lead to involvement in the illegal bird market. The findings of our study generated six categories that could be determined as the reasons for such involvement.

**[Insert “Table 2. Reasons for involvement in the bird market” here.]**

#### **(i) Actor networks and partnerships**

As noted earlier in relation to market theory, earning a livelihood and working in partnerships can be key features of participation in different levels of an illegal market (Warchol et al. 2003).

*I have many friends who work in the bird market; working there is profitable for me and makes me spend time with my friends.*  
(Naser,<sup>1</sup> 42-years-old, market worker)

*I have been working in this market with my friends for about ten years now and we were one of the first people who thought of trying a bird market and started working in this market with my friends.*  
(Haidar, 54, market dealer)

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<sup>1</sup>This is a pseudonym. As noted above, pseudonyms were used for all of the interviewees.

**(ii) Weak formal social control:** Weak formal social control refers to inadequate implementation and enforcement of environmental laws. In the present study, participants stated that one of the reasons for continued participation and trade in the illegal bird market is that without fear of apprehension and punishment, there is little reason to stop:

*When we are active in this market, no one is stopping us. Once in a while, municipality officers arrive and issue some warnings before leaving again; no department has taken any serious measure against us.*

(Rahim, 44, market dealer)

*Sometimes when the health department predicts the spread of diseases among birds, it gives us warnings and goes and advertises a little in the city that you should not buy wild birds. This has happened perhaps once or twice in the last few years and we are not reminded much.*

(Jamal, 30, market seller)

**(iii) Consumer demand:** Demand for a specific good or product is often the main reason that a market (legal or illegal) emerges. Actors in the illegal bird market assert that people's preference for the meat of these birds and, in general, the reliability of customer demand, are major sources of encouragement for engaging in the illegal bird market.

*Bird meat is popular in this region and people have been eagerly consuming the meat of these birds for 200 years, especially now that everyone can hunt.*

(Hamid, 41, market dealer)

*When I see that all people love the meat of these birds and can pay for it, I become an intermediary between hunters and the people and earn money.*

(Karim, 31, market dealer)

**(iv) High profit:** Profit is a type of financial benefit obtained if the costs are low and sales are high. Participants mentioned these factors as major reasons for their involvement and for the continuation of the market.

*Working in the bird market is very profitable since we do not pay anything as rent, membership fees to unions or to anywhere else and we can keep all the money that we make. Sometimes we take birds from hunters and pay them after selling the birds.*

(Taghi, 56, market seller)

*Due to the large number of customers we have, we always sell birds quickly .... Also, in most cases, we give less money to hunters and get more money from customers. Sometimes the profit from selling the bird is two to three times the amount we give to the hunters.*

(Mohammad, 38, market seller)

**(v) Market self-regulation:** The lack of effective governmental oversight—even if officials declare it to be successful—also provides incentives to engage in markets such as this. The reason is that participants are free to set the prices of birds based solely on considerations regarding the number of birds available daily, and scarcity or rarity:

*We don't have any union to tell us what to do or not to do. This is good since there is no one to set the price and we do not pay anything as monthly or annual fees.*

(Shahram, 35, market worker)

*Because the prices in the market are set by the sellers themselves and generally the market elders determine the purchase price from the hunters and the selling price to the sellers ..., we get a good profit.*

(Asghar, 43, market dealer)

**(vi) Financial problems:** Economic downturns place increased stress on individuals and will make them more likely to engage in criminal activities (Mir Mohamad Tabar et al. 2020). From the participants' perspective, financial hardships, such as permanent or seasonal unemployment or the high cost of living, force them to enter the illegal bird market.

*I don't have any job and if there is no job in the bird market, I have to work as a manual worker. Our manual work is mainly due to construction and since there are not many construction jobs in autumn, that is not in a good*

*situation either; you can find a job for one day and you're jobless for 10 days after that.*  
(Yadallah, 38, market worker)

*My living expenses are high and I have to work in other jobs besides my agricultural job. Agricultural work provides for my living expenses. For my children's education expenses, I have to do other work besides agricultural work.*  
(Farhad, 55, market worker)

### ***Strategies for continuing to remain active in the illegal bird market***

Strategies are actions and reactions that actors devise and follow in response to prevailing conditions or the occurrence of a new phenomenon. In this study, strategies refer to the methods that bird market actors use to continue their activities in this market. According to our findings, three categories of methods or strategies were identified:

**[Insert “Table 3. Strategies of bird market actors” here.]**

#### **(i) Claims of normality and avoidance of censure**

Using specific rationalizations and neutralizations (Sykes and Matza 1957; see also Thiel and South, 2022; Wyatt and Brisman 2017), such as denial of harm or responsibility, and condemnation of the condemners, participants in deviant or criminal activity can justify their actions for themselves and others and overcome internal feelings of guilt and shame. One method is to claim that their behavior is “normal”—that the behavior is prevalent in society and thus should not be considered deviant or criminal (Mir Mohamad Tabar et al. 2023). Such claims allow actors to deflect blame and reject a negative image of themselves. Participants in this study were able to reduce stigma and anxiety about censure by viewing their activities as simply well-known and normal:



*How can it be illegal when all the people of the city come and buy from us? If it is illegal, it should not be done by all people.*

(Abbas, 39, market worker)

*Hunting birds and selling them has always happened in this region, but over the past few years, it has received more attention from the media who are exaggerating it; but it is not a big deal.*

(Morteza, 35, market worker)

**(ii) Bribery and corruption:**

Significantly, participants in the study pointed out that by establishing a friendly relationship with law enforcement officials, such as the police, environmental officers, and health department staff, they could, to some extent, avoid enforcement of the law and manage their business without much interference.

*Most people who are active in this market, especially major merchants, are friends with urban authorities such as local government and municipality staff and the police; so they do not disrupt our activities or close our stands due to legal reasons.*

(Mahmoud, 42, market dealer)

**(iii) Collective defiance:**

Collective defiance refers to market participants' "flexing their muscles" to defend their interests against intrusive actions by law enforcement officers. Usually, this ends in favor of market participants and law enforcement officers retreat and focus their efforts elsewhere. Not paying attention to warnings issued by the municipality and not shutting down the market are examples of some of these activities.

*Recently, municipality issued a warning that they are going to destroy the bird market overnight and ordered us to shut down the market. We said that we are 2000 people and immediately after the market is destroyed we would rally in front of the municipality.*

(Ghasem 61, market seller)

*In the fall of this year, a meeting was held in the governorate and the head of the Security Council of Mazandaran Province threatened to ruin the bird market. We are not afraid of their threats and we consider it our right to operate in the bird market.*  
(Ibrahim, 48, market dealer)

### ***Outcomes of activity in the bird market***

By considering the conditions and foundations of the bird market and the strategies at play, we can identify four categories of outcomes:

**[Insert “Table 4. Outcomes of activity in the bird market” here.]**

#### **(i) Job creation:**

Participants of the study stated that engaging in bird market activities has created jobs for them and everyone who takes part:

*The bird market has a lot of benefits—one of which is the creation of jobs for those who are active in it. In addition, it creates jobs for hunters who can earn a good income in autumn and winter.*  
(Saeed, 33, market worker)

*The bird market has also created jobs for people who are somehow involved in bird hunting, such as livestock sellers. If the sales situation is good, hunters will earn income and with this income they can buy more livestock and livestock sellers will also benefit from this bird market income.*  
(Rahim, 44, market dealer)

#### **(ii) Commodification of nature:**

Commodification of nature means that various elements of nature, such as aquatic creatures, birds, and trees, are treated and traded like any other good (see generally Savage 1963). In the process of commodification of nature, the cultural system, such as media, and the economic system, such as production and consumption, interact with the environmental system in various ways (Brisman and South 2014). In the present study, participants commodify nature and consider the environment and creatures living in it as “goods”: there is no cost to the

humans who engage in the trade, the cost to the birds is discounted, and the trade produces a profit and provides an income:

*These birds are migratory and will return to Russia; if we do not hunt them, they might hunt them over there; I am making money from these migratory birds and have also employed several people and I am providing a livelihood for several families.*

(Karim, 31, market dealer)

*In this bad economic situation and high prices, we do not steal and do not harm anyone, we only make money from nature and its aerial birds.*

(Hamid, 41, market dealer)

### **(iii) Social regulation:**

Through the division of labor and social interaction, markets can create new forms of social regulation and order. Participants noted that their services in the market facilitate relationships between hunters and consumers, and that this can lead to the creation of a localized order and retention of such activity in one area of the community.

*We just link buyers of birds to hunters so that hunters can easily sell whatever they have hunted and buyers can easily buy birds. This facilitates the relationship between buyers and sellers.*

(Mohammad, 38, market worker)

*The bird market concentrates all the activity and transaction of birds in a single place and prevents retailing and peddling these birds in various places throughout the city.*

(Jamal, 30, market seller)

### **(iv) Raising funds and attracting customers:**

The findings of the study show that, from the point of view of those involved, the presence of an organized illegal bird market in a specific area attracts customers

from other cities and provinces who then spend their money in other *legal* markets in the region. The illegal markets are, therefore, beneficial in a broad sense.

*I always have customers from Tehran and other provinces who make a lot of purchases; therefore, we can make income for the city by selling birds.*  
(Farhad, 55, market dealer)

*Nearly 30 percent of our customers come from adjacent cities. We can sell the birds with higher prices to customers of adjacent cities and therefore make more profit.*  
(Nader, 32, market seller)

## **Discussion**

The objective of this study was to identify the conditions supporting the continuing operation of a longstanding illegal bird market in Fereydunkenar County. Findings from the study show that actor networks and partnerships, weak formal social control, high profits, market self-regulation and consumer demand are among the major underpinnings of the market. In turn, the operation of the market results in the creation of jobs, the commodification of nature, localized social order, and the attraction of capital into the area. Actors in the illegal bird market employ various strategies of justification and rationalization, such as claiming to engage in what is locally accepted as a “normal” behavior and blaming critics for misunderstanding, as well as engaging in forms of bribery and in collective defiance to continue their activities in the illegal bird market.

These findings show that the lack of strong and effective enforcement and punishment also contributes to the formation and continuity of illegal activities in the bird market. These findings are also supported by previous studies (Mir Mohamad Tabar et al. 2021b; Pires and Clarke 2011; Pires and Petrossian 2016; Sosnowski and Petrossian 2020).

As shown in the interviews, the illegal bird market is a way to mitigate and adapt to economic problems (unemployment, high costs of living) in the Fereydunkenar region. This

reflects the results of various reports (e.g., Central Bank of Iran 2018; Mir Mohamad Tabar and Noghani 2019) that have shown that the unemployment rate in Fereydunkenar has been higher than the national average. The findings of previous studies (e.g., Wyatt 2009; Zabyelina 2014) also show that unwelcome economic conditions, such as unemployment, are significant factors in encouraging activity in illegal wildlife trades.

In line with market demand reduction theory, interviewees mentioned customer demand and the possibility of achieving high profits as attractive features of the illegal bird market. As previous studies have demonstrated (e.g., Cao Ngoc and Wyatt 2013; Wyatt 2016; Phelps and Webb 2015; Wyatt 2016), financial opportunities, profit-seeking participants, and customer demand are among the major elements for formation and/or continuation of illegal wildlife trades.

The motives and factors underlying the operation of the illegal bird market in Fereydunkenar are interrelated. Financial problems influence participation in, and continuation of, the market but also have an effect on the willingness of law enforcement officials to prosecute and punish violators because in a region with economic problems, such as high unemployment and inflation, law enforcement officers may be less inclined to disrupt what are seen as traditional and relatively unproblematic ways of earning money. The implications of this are that: weak official oversight can directly and indirectly affect the illegal bird market; and when law is not enforced properly, people may be more inclined to buy poached birds knowing there is market demand but little chance of penalty. The absence of punishment for violating proscriptions against hunting and selling birds encourages more individuals to operate in the illegal market in pursuit of high profits. High profits and market demand affect the illegal bird market directly and indirectly. These factors also influence decisions to connect with friends who also work in the illegal bird market, maintaining these relationships and inviting others into the social groups.

Neutralization techniques also enable the continuity of illegal markets (Sykes and Matza 1957; see also Mir Mohamad Tabar et al. 2023; Thiel and South 2022; Wyatt and Brisman 2017). For example, claims of “normal” behavior and condemnation of the condemners are strategies that are employed to avoid social ostracization and other unofficial censures (Grasmick et al. 1991; Kelley et al. 2009; Sollund 2012). At the same time, according to interviewees, more exceptional, less normalized, strategies might include bribery, corruption and the mounting of resistance against the implementation of laws whenever attempts are made. Although more clearly deviant or criminal than some of the other means of ensuring market stability and endurance, these latter techniques are widely reported in other studies of markets for wildlife and natural resources for which there is strong market demand and hence high profit potential to be protected (e.g., Cao Ngoc and Wyatt 2013; Elliott 2011; Zabyelina 2014).

For the wider community, the illegal bird market creates employment, turns locally available environmental resources into “goods” and commodities that drive economic activity and attract capital, and provides a self-regulating and socially cohesive community (see generally Savage 1963). While these outcomes might be socially beneficial and economically valuable for the local population in the short term, they reflect a lack of engagement with the welfare of the birds hunted and killed, and a lack of concern for or appreciation of the impacts of these activities on the preservation of endangered species and of the importance of conservation of wetlands. As Stoddart (2012) states, sustainable development should combine economic, social and environmental objectives for maximizing human welfare at present, without hampering the ability of future generations to meet their needs. Others, such as Beirne (2018) and Sollund (2019), would also add that the welfare of other species should be given higher priority.

## **Conclusions**

Bird hunting and trade in the Fereydunkenar area are illegal and, due to the lack of available official statistics, the volume of such activity is not known. Future responses will require further data to inform environmental and social policy interventions. Overall, past research shows that two key factors in the formation and successful continuation of illegal markets are consumer demand and the opportunity to generate profit, which attracts entrepreneurially-oriented individuals (van Uhm et al. 2021). As with other markets however, legal or illegal, both profit-orientation and consumer demand do not generally—at present—follow the principles of sustainability, such as protecting natural resources for future generations. This is the case with regard to the illegal bird market described here and this means that questions about damage to the regional ecosystem and, in the case of migratory birds, to ecosystems thousands of miles away, are not considered. Yet, localized illegal wildlife trades can be destructive to environments and ecosystems in a region in a variety of ways (see, e.g., Mir Mohamad Tabar et al. 2023; Wyatt 2011) and, as with other threatened wetlands in Iran, the anthropogenic causes of ecosystem disruption alongside poor land and water management, have drawn international attention (UNEP 2018; see also Savage 1963). Two consequences of the continued practices of hunting and sale of birds have been seen as particularly noteworthy and serious.

First, the threat to at least one or more species is that of extinction. Most notably, the last male Western Siberian crane—named “Omid” (“Hope”) by birdwatchers and conservationists—has been migrating alone between Siberia and the Fereydunkenar wetlands ever since illegal hunters shot his mate, “Arezou” (“Wish”), in 2007 (IFP 2023). Unless attempts to introduce “Omid” to “Roya,” a crane bred in captivity in Belgium, result in offspring, this will be the end of the Western Siberian Crane and its traditional migration flyway (Mirande 2023). Field observations by environmentalists show that Roya separated

could not complete the migration to Siberia with Omid in March 2023 (Kavian 2023). The failure to find a permanent mate for Omid and Omid's return to solitary migration has made it less likely that the extinction of the Siberian Crane can be prevented.

Second, in the case of Fereydunkenar County, the importance of agriculture means that any threat to the regular visits of wintering migratory birds could have a very adverse effect on agricultural production as farmland fertility benefits from the excreta of these birds - a major reason for the high quality of rice produced in the region - and the birds' natural role in controlling pests protects crops. Hunting wild birds is likely to lead to a reduction in land fertility and consequently in the quality of rice produced in Fereydunkenar, creating future financial problems for farmers. The failure to recognize the intertwined co-dependence of the constituent parts of a sustainable eco-system is regrettably commonplace here as elsewhere (Kolbert 2014)

Our case study illustrates how a variety of influences produce a narrowly focused set of behaviors which deny or fail to recognize the related cascade effects caused by disruptive harms to ecosystems, including pushing the survival of some species to the edge of extinction. Our paper, therefore, aims to make an interdisciplinary contribution to green criminology, conservation criminology and ecological sciences, and serve as a call for similar case-studies in locations beyond the usual borders of "Northern" or "Western" criminology.

Finally, bird hunting and trade in the Fereydunkenar area are illegal and the effect of some important variables, such as deterrence effects of punishment for committing these illegal activities, is not known. It seems that environmental organizations in the region lack information. Some previous studies have focused on the impact of the presence of law enforcement on committing environmental crimes in this region (e.g., Mir Mohamad Tabar et al. 2021a), but they have not examined the role of deterrence. Future studies should focus on law enforcement and deterrence of punishment for committing environmental crimes.



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**Table 1. Characteristics of interviewees in the study**

<b>No.</b>	<b>Name</b>	<b>Age</b>	<b>Education</b>	<b>Job</b>
1	Ibrahim	48	Elementary	Market dealer
2	Jamal	30	Bachelor	Market seller
3	Abbas	39	Elementary	Market worker
4	Ghasem	61	Elementary	Market seller
5	Haidar	54	Middle school	Market dealer
6	Hamid	41	Middle school	Market dealer
7	Asghar	43	High school diploma	Market dealer
8	Farhad	55	Middle school	Market dealer
9	Javad	43	Associates	Market seller
10	Karim	31	Associates	Market dealer
11	Mahmoud	42	High school diploma	Market dealer
12	Shahram	35	Bachelor	Market worker
13	Taghi	56	Elementary	Market seller
14	Yadallah	38	Elementary	Market worker
15	Naser	42	Middle school	Market worker
16	Rahim	44	Middle school	Market dealer
17	Reza	40	Associates	Market dealer
18	Saeed	33	Bachelor	Market worker
19	Mohammad	38	High school diploma	Market seller
20	Morteza	35	High school diploma	Market worker
21	Nader	32	Bachelor	Market seller

**Table 2. Reasons for the formation of the bird market**

<b>No.</b>	<b>Concepts</b>	<b>Categories</b>
1	Presence and engagement of friends in the market, encouragement by friends to participate in the market, collective cooperation with friends in the market.	Actor networks and partnerships
2	Occasional warnings by environmental officers or the police, occasional notifications by the Department of Health, few warnings by municipality officers.	Weak formal social control
3	High rate of sales, high price, high and net profit, low probability of loss, ease of purchase and sale, low capital requirements, conducting transactions in cash, not paying rent for sales outlet, not paying union membership fees, not paying taxes	High profit
4	Lack of union, lack of approved prices for the product, setting the price by merchants	Market self-regulation
5	Many customers in this market, presence of customers from other provinces, customers who are relatives and acquaintances, regional preference for the meat of these birds	Customer demand
6	Permanent unemployment, seasonal unemployment, earning a proper income, costs of living, earning a livelihood	Financial problems

**Table 3. Strategies of bird market actors**

<b>No.</b>	<b>Concepts</b>	<b>Categories</b>
1	Buying and selling birds by everyone in the region; widespread prevalence of bird trade in the region; legislature's lack of understanding about the conditions; exaggeration by media	Claims of normality of the behavior and condemnation of the condemners
2	Friendship between law enforcement officers and major sellers in the market; offering various birds that are	Bribery and corruption

	present in the market as gifts to law enforcement officers; inviting environmental officers to dinner and lunch	
3	Not paying attention to warnings issued by the municipality; failure to shut down the bird market	Collective defiance

**Table 4. Outcomes of activity in the bird market**

<b>No.</b>	<b>Concepts</b>	<b>Categories</b>
1	Creation of jobs for sellers in the market; creation of jobs for ‘gofers’; creation of jobs for hunters; creation of jobs for suppliers and sellers of hunting equipment; decent cash flow for the market	Creation of jobs
2	Making an income from the environment; making money by hunting birds; making money by hunting migratory foreign birds	Commodification of nature
3	Meeting the demands of buyers of birds; linking hunters (initial suppliers) to final buyers (consumers); preventing peddling of birds in the city	Social regulation
4	sales to adjacent cities; sales to travelers from other provinces	Raising funds