

Control of the alien pest: HOUSE CROW



A Summary of the situation in Kenya and the proposed solution

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Contents

The Indian House Crow Problem

- Introduction Pg. 3
- Human Cost Pg. 4
- Economic Cost Pg. 5
- Environmental Cost Pg. 6
- Scale of Problem Pg. 8

The Indian House Crow Solution

- Introduction Pg. 9
- Efficacy Pg. 10
- Safety Pg. 12

Resources

- Introduction Pg. 16
- Letter s Pg. 17
- Websites Pg. 18
- Reports
- Environmental Impact Assessment



The House Crow Problem

- The Indian House Crow (*Corvus splendens*), as its name suggests, is originally from the Indian subcontinent.
- It was introduced to Zanzibar in the 1890s to control waste, where it rapidly grew in numbers and spread to the African mainland, reaching Mombasa by 1947.
- It is now found along the whole east coast of Africa from Djibouti to Durban and is spreading around the Cape and even moving inland.
- It is found primarily in urban areas, where it can scavenge easily, but is highly intelligent and adaptable and so can exploit a wide range of resources.
- It is widely considered to be a pest and a menace by coastal communities across Africa, affecting people's lives, their livestock and the local wildlife.
- Intensive House Crow control programmes using the avicide *Starlicide* are currently being implemented in Tanzania and South Africa in an attempt to control the pest.



The House Crow

Problem: Human Cost

- **Risk for Health :** The crows spread disease, partly through spreading rubbish and also through their faeces. They are known to carry eight enteric pathogens including cholera and salmonella. This is especially problematic in markets, where they gather and contaminate produce by pecking at it and defecating on and around it.
- **Menace to Society :** House Crows are intelligent, aggressive and have little fear of humans, and hence will harass and mob people who may have food. They are known to even recognise certain humans, who carry out extermination programmes and mob them. This behaviour is especially threatening for young children. House Crows frequently steal food from tourist tables in hotels & produce from kiosks such that many kiosk owners have given up and shut down.
- **Damaging Infrastructure:** House Crows like to use metal wire for building nests and often build their nests on electricity insulators, telephone lines, satellites and other infrastructure. This damages these structures and as they pull out wires for nest building material they are known to cause local power cuts.

The House Crow

Problem: Economic Cost

- **Damaging Agriculture** : Flocks of crows will strip areas of crops, whether commercial fruit farming for example or subsistence maize production. They will systematically eat newly planted seeds in fields and are regularly known to carry off chicks and even peck out the eyes of new born livestock.
- **Damaging Tourism** : Tourist areas on the coast are plagued by the visual and audible pollution these birds create and they roost in great numbers in otherwise picturesque locations. In addition they harass visitors, especially in areas, such as outdoor restaurants, where they know they can get food from customers plates.



http://bukobasteve.blogspot.com/2010_07_01_archive.html



The House Crow Problem: Environmental Cost

- **Indigenous Bird Populations** : House Crows will out compete any other birds in their local area for food and roosting and nesting sites. They actively mob competitors and destroy nests and their eggs. They even mob and harass species which are of no consequence to them – appearing to do it simply for ‘fun’. In a report by the Environmental Agency for the Republic of Djibouti (see resources section) it was noted that, “*the rapid growth of their numbers led to very striking reductions in the numbers and varieties of indigenous bird species*”
- **Turtle Nesting** : Hatchlings are targeted, which severely threatens some breeding localities. For example, in the same report mentioned above, it is recorded that, “*On Haramous, Musha and Msakali islands long established breeding colonies of more than 15 seabirds species and 2 marine turtle species, predation on hatchings is virtually 100%. The crows turn the turtle victims on their backs and attack their soft under parts.*”



The Indian House Crow Problem: Environmental Cost

Here are a few examples of quotes from ornithological works on the threat that the Indian House Crow poses for East African avifauna.

Birds of Kenya and Northern Tanzania - 1996

Dale A Zimmerman, Donald A Turner, David J. Pearson

'[The crow] Harasses and kills small birds; very destructive to eggs and nestlings. Spreading (from Zanzibar) to Dar es Salaam, Tanga, Pemba Island and Mombasa. Now abundant and ubiquitous... inland to Makinnon Road.'

The Birds of Africa Volume VI - 2000

Adrian Craig, Llewellyn Grimes, Michael Irwin, David Pearson

General Habits: 'Raids heron and weaver colonies tearing holes in weaver nest taking eggs and young. ...Climbs silently in undergrowth searching for nests of small passerines.'

Birds of East Africa - 2002

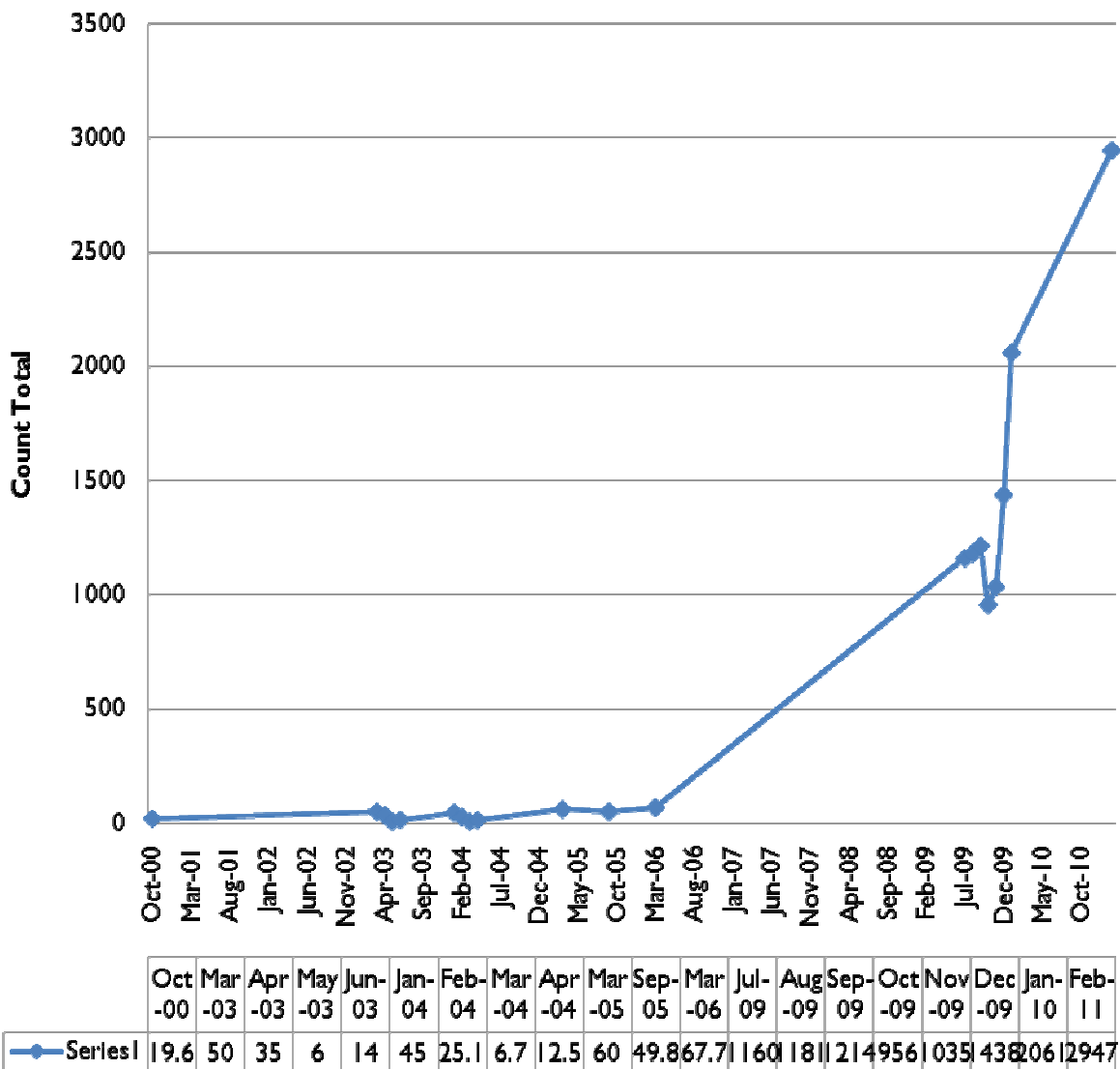
Terry Stevenson and John Fanshawe

'...numerous and regarded as a serious pest along much of the coast, where it destroys nests of smaller birds and competes with the resident Pied Crow.'

The Scale of the Problem

From 1999-2005 crow populations were carefully controlled in Watamu & Malindi by A Rocha Kenya under the auspices of Kenya Wildlife Service. This graph shows the crow population levels in Malindi since 2000.

Crow Counts in Malindi





The House Crow

Solution: *Starlicide*

- The most effective method at controlling the House Crow is using the poison: **3-chloro-ptoluidine hydrochloride, DRC-1339** or **Starlicide** (its brand name taken from its role in starling control in North America).
- Bait, (often small pieces of meat) initially poison-free, is strategically placed in crow feeding grounds such as rubbish dumps for several days in a row until crow numbers build up on it. On the last day the bait is laced with the poison & carefully watched to keep away any non-target species.
- Other methods such as trapping and shooting don't work as well because the crows are intelligent enough to avoid these methods. They learn to recognise people using guns and traps and simply fly elsewhere and even mob them. In Japan, where nest destruction was employed, the crows started building decoy nests to lure the pest control workers away from their real nests.
- The biggest advantage of Starlicide is that it has a delay of around 12-20 hours before death, meaning birds usually die in their roosts a long way from the baiting site. In this way others in the flock don't make an association with the baiting site and don't learn to avoid it.

The Indian House Crow

Solution: Efficacy

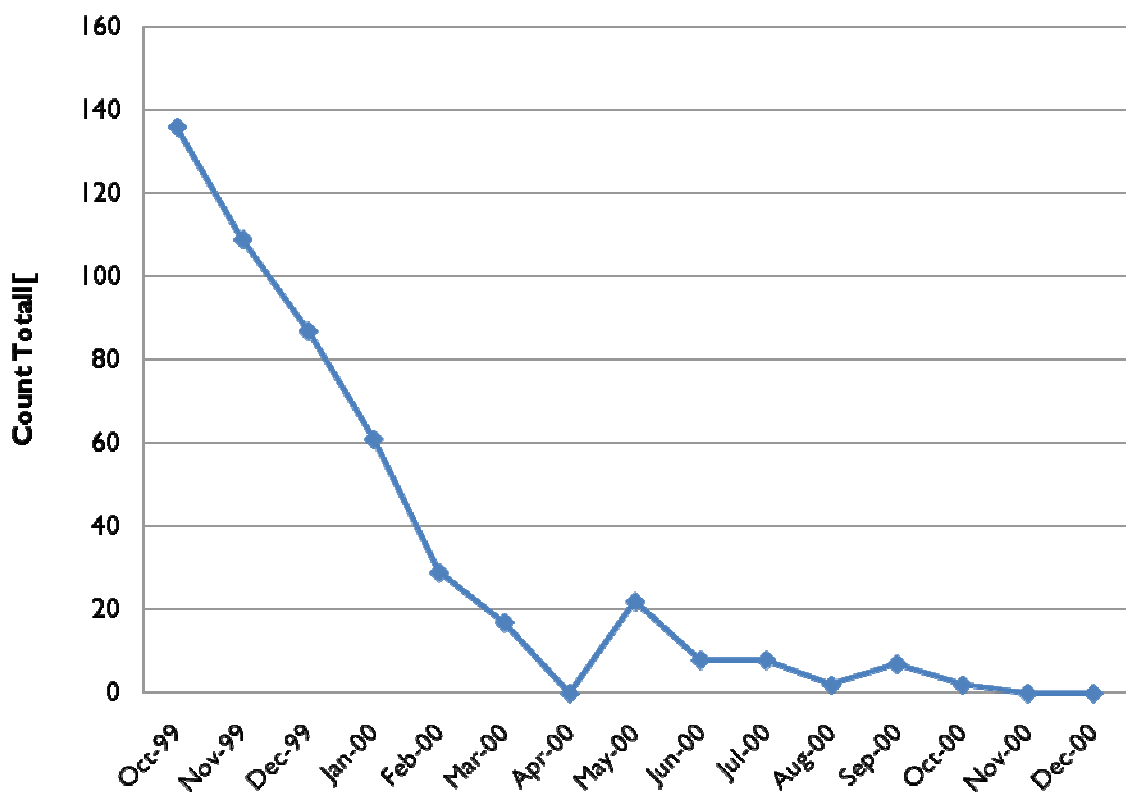
Starlicide has been widely used around the world to control both the House Crow and other avian pests. Below are some quotes supporting its use.

- “DRC-1339 (3-chloro-4-methylaniline hydrochloride) was identified during this screening program as a promising avicide for blackbirds, starlings, rock doves; and corvids.” - *United States Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services*
- “... and of utmost importance, an introduction to an alternative avicide (i.e. Starlicide). This drug is species specific, **with no secondary poisoning** and, unlike the drug currently used, takes effect some 18 - 20 hours later” – *Durban City Government, South Africa*
- “More than eleven thousand crows were observed and up to ten thousand were killed in six months of crow control activities as part of Indian House Crow Control Programme in Republic of Djibouti in 1999 (whole Indian House Crow population were reduced up to 85% in Republic of Djibouti – Bilan d’activités, Houssein A. Rayaleh, July 1999) . The poison used was DRC-1339, formerly marketed as (Starlicide)”. - *Research Ecologist Technical Adviser of the Ministre de l’Habitat, de l’Environnement, et de l’Aménagement du Territoire for the Republic of Djibouti*
- “To date, **the most effective control has been achieved using the poison Starlicide** (3-chloro-p-toluidine hydrochloride)” – *Global Invasive Species Program (GISP), IUCN*

The Indian House Crow Solution: Efficacy

The graph shows the decrease in crow population in Watamu after Starlicide began to be used in late 1999.

Crow Counts in Watamu



	Oct-99	Nov-99	Dec-99	Jan-00	Feb-00	Mar-00	Apr-00	May-00	Jun-00	Jul-00	Aug-00	Sep-00	Oct-00	Nov-00	Dec-00
Count	136	109	87	61	29	17	0	22	8	8	2	7	2	0	0



The House Crow Solution: Safety

With any use of harmful substance there are safety concerns for the health of people and the environment. An Environmental Impact Assessment (EIA) was carried out by Skal International (see resource section) on the use of Starlicide as a control method for House Crows including how to mitigate these risks. Relevant extracts are presented below.

Starlicide was designed and produced in the USA for starling and other avian pest control. The facts below about Starlicide are taken from a paper by the United States Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services and a review by the United States Environmental Protection Agency (EPA) (see resource section for full documents).

These government bodies are amongst those that give clearance or restrictions on the use of poisons in the USA. Using stringent legal and scientific processes, both conclude that the use of Starlicide is justifiable and safe when used properly.



The House Crow

Solution: Safety

- The US Department of Agriculture states that;
“Development of this avicide included testing it on as many species (birds, mammals, aquatic organisms and plants) as possible to assess the potential for non-target effects and its safety. As a result, this compound has one of the most extensive databases for acute oral toxicity to birds of any C. S. Environmental Protection Agency (USEPA)-registered pesticide.”
- The EPA concluded that;
*“All pesticides sold or distributed in the United States must be registered by EPA, based on scientific studies showing that they can be used without posing unreasonable risks to people or the environment. Because of advances in scientific knowledge, the law requires that pesticides which were first registered years ago be reregistered to ensure that they meet today's more stringent standards. **The use of currently registered products containing starlicide in accordance with approved labelling will not pose unreasonable risks or adverse effects to humans or the environment. Therefore, all uses of these products are eligible for reregistration.**”*



The House Crow

Solution: Safety

Risk to Human Health

- Starlicide is considered moderately toxic by the oral route and slightly toxic by dermal route (EPA toxicity category 2 and 3). It is corrosive to skin and eyes (EPA toxicity category 1). It is not a mutagen or a carcinogen.
- There are no known food or feed related uses of Starlicide and in this project there will be no usage of the substance associated with food, hence no human dietary exposure is expected.
- The EPA considers risk of human contact with the substance in application sites to be minimal and hence of negligible risk to the public.
- The only major case of human interaction with the substance will in fact be the pest control workers.
- In the use of Starlicide in Kenya for House Crow control, employees are strictly trained in the pre-baiting technique, in how use protective gear, including goggles, gloves, overalls and inhalation masks when directly handling the substance. They are also strictly trained in allowing only the target species to consume the treated bait thus further minimising any risk to other people.



The House Crow

Solution: Safety

Risk to the Environment

- Starlicide is very highly toxic to some birds and freshwater invertebrates and moderately toxic to mammals and freshwater fish. Non-target birds and mammals may be at risk from eating Starlicide treated bait (primary exposure), or as scavengers and predators, from consuming animals who have eaten treated baits (secondary exposure).
- However, fortuitously the sensitivity of different bird species varies greatly, with pest birds, such as blackbirds, corvids (crows), rock doves, gulls and starlings among the most susceptible. All five species tested within the order Falconiformes are 100 to <500 times *less sensitive* than the most sensitive target species.
- In baiting sites, the main risk of primary exposure will be for indigenous Pied Crows, Black Kites and stray dogs. Baiting sites will be closely and constantly monitored while the poison is out and non-target animals will be deterred by simply throwing stones at them – a method proven to be highly effective.
- Risk from secondary exposure from eating crow corpses is limited. The chemical is entirely metabolised and excreted in about 2 hours after eating the bait and renders the dead crow bodies poison free.



Resources

In this section there are a range of sources about the pest status of the House Crow and the control method of using *Starlicide*. Information from these sources was used to produce this portfolio, but the originals can give a greater volume of information about issues mentioned.

- Letters: From various stakeholders, from residents to government bodies giving accounts of problems with crows and support for this project
- Websites: A diverse selection of web resources used for this portfolio, but by no means exhaustive of what can be found on the web.
- Reports: Official Scientific and Government documents.
- Environmental Impact Assessment: The full EIA produced by Skal International, and applicable to this project.



Resources: Letters

Watamu Resident

Dear Sir,

Indian House Crow, Watamu

In the last few months we have noted a dramatic increase in the Indian House Crow at Watamu. In the past they were kept under control. Due to the ineffectiveness of our Council to provide any form of rubbish collection, we have severe rubbish problems. We now also have Indian House Crows all along the coastal strip from Watamu to Malindi. The dump at Watamu is one of their favourite areas.

As I am sure you are aware the Indian House Crow is a well-known alien pest. It is starting to have a significant effect on people's lives in our area and the bird populations. Again I am sure that you are aware of what these problems might be.

Watamu is part of a UN Biosphere area and many people derive their living from the fact that it is a special natural area. Indian House Crows are having an impact on our bird life as well as spreading rubbish, let alone the disease aspect. The Indian House Crow programme worked diligently to ensure this bird did not become a pest. It seems a shame that after so many years of excellent control all this hard work is being ruined because a poison, which is accepted world wide as a good control medium, can not be imported into this country at this time.

We urgently request that this problem is looked into.

Yours faithfully,

N. Parazzi
Watamu South Area



Resources: Websites

- <http://www.gisp.org/casestudies/> : Global Invasive Species Programme
- http://www.durban.gov.za/durban/discover/outdoors/parks/parks/conservation/crow_must_go : Durban City Council's website
- <http://www.wildsingapore.com/news/20060506/060509-5.htm> : Discussing crow control in South Africa
- <http://www.news.com.au/breaking-news/kid-killing-bird-the-indian-house-crow-arrives-by-boat-from-asia/story-e6frfku0-1225964946676> : Article about crow arriving in Queensland, Australia
- <http://nitawriter.wordpress.com/2009/05/25/the-indian-house-crow-should-not-thrive/> : Useful blog about main problems with the crow

Environmental Impact Assessment

- Aduda, K.W., 2007, *For The Proposed Control Of Indian House Crow Along The Kenya Coast And Inland EIA* by Relief And Environmental Care Africa.



Resources: Reports & Scientific Papers

See Appendices:

- **Toxicity study for Starlicide:**
Eisemann, J.D., Pipas, P.A., & Cummings, J.L., 2003, *Acute And Chronic Toxicity Of Compound Drc-1339 (3-chloro-4-methylaniline Hydrochloride) To Birds*, Wildlife Damage Management, Internet Center for USDA National Wildlife Research Center - Staff Publications
- **US Government FACT Sheet for Starlicide:**
United States Environmental Protection Agency, 1995 *R.E.D. (Re-registration Eligibility Decision) FACTS: Starlicide (3-chloro-p-toluidine hydrochloride)*, Prevention, Pesticides and Toxic Substances (7508W) EPA-738-F-96-003 Fact Sheet
- **Safety Data Sheet for DRC1339 for Export – New Zealand:**
Animal Control Products Ltd, 2006, *Safety Data Sheet for DRC 1339 – STARLICIDE*, Wanganui, New Zealand
- Rayaleh, H.A., 2005, *Indian House Crow population Control programme in Republic of Djibouti*, unpublished proposal