Project: Implementing measures to control invasive alien species in Wadi Gharaba Special Conservation Area

"وضع اجراءات للحد من الانواع الغازية في منطقة وادي غربة الهامة بيئيا"

Report on the impacts of The Common Myna *Acridotheres tristis* on agriculture and wild birds, and results of monitoring invasive species in Wadi Gharba

Submitted by Fares Khoury, 11th July 2023

A) Impacts of The common myna *Acridotheres tristis* on agriculture in the South Shuna area

B) Impacts of Common Myna on wild birds in Wadi Gharba and its surroundings

C) Results of monitoring alien mesquite *Prosopis julifora* and common myna in Wadi Gharba

A) Impacts of common myna on agriculture and on wild birds in the South Shuna area

It has been reported that common mynas has a negative impact on agricultural crops. Being an omnivore, it is highly opportunistic and has a diversified diet. A review of research carried out on the diets of common myna has been carried out by Hart, Rogers, and van Rensburg (2020). Accordingly, the mynas feed mainly on insects, fruits and grains. The feeding habits may vary among habitats. In agricultural areas, it feeds on insects and may feed on crops, depending on the crop itself; they scavenge around dumps, farms and city streets. Mynas occasionally feed on eggs, nestlings or fledglings of small birds. Mynas prefer diets rich in lipids and protein, and prefer glucose rich diet when compared with food rich in sucrose. In Jordan, mynas are observed foraging mainly in streets and around dumps where they feed on food waste leftovers of humans. They also feed on insects near livestock and in farms. They were also observed feeding on the fruits of a wild, ruderal plant (see below) in the Jordan Valley.

This report summarizes the results of interviews carried out with 98 farmers (landowners and farmers renting land) in the south Shuna area, followed by conclusions about the current effects of mynas on agriculture and the perception of local farmers in the Jordan Valley, where the alien invasive myna is present since around 2010 and has rapidly spread and become common (Khoury et al. 2021). The interviews were carried out in Arabic language during physical and virtual (e.g. phone call) meetings. The interview included ten questions about various factors affecting their crops and the impact of the common myna and other selected native birds on their crops (see Appendix).

Most interviewed farmers (60%) plant vegetables (e.g. tomatoes, Zucchini, Cauliflower, Eggplant, Honey melon, Mulukhiya/Jute) and honey melons, while others own or work in date palm (10%) and banana plantations (21%). A few plant barley or ornamental flowers, see Figure 1.

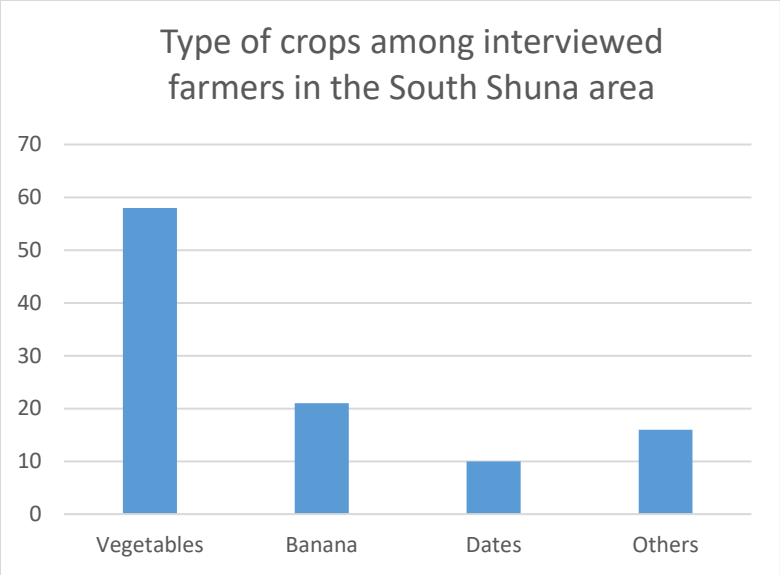


Figure 1: Type of crops among the 98 interviewed farmers. Vegetables are generally the most common crop type in the southern Jordan Valley.

According to the interviews, the main factors affecting crop production in the Jordan Valley are water availability (58%) and quality (45%), soil salinity (58%) and adverse weather conditions such as extreme heat and drought (49%), while 20% of the farmers mentioned dust as an additional problem. Two famers only mentioned diseases and animals as the main problem. Thus, when asking about the general factors, physical factors like lack of water and high salinity of water and soil, adverse weather (like extreme heat) and dust were more important than pests and animals feeding on their crops.

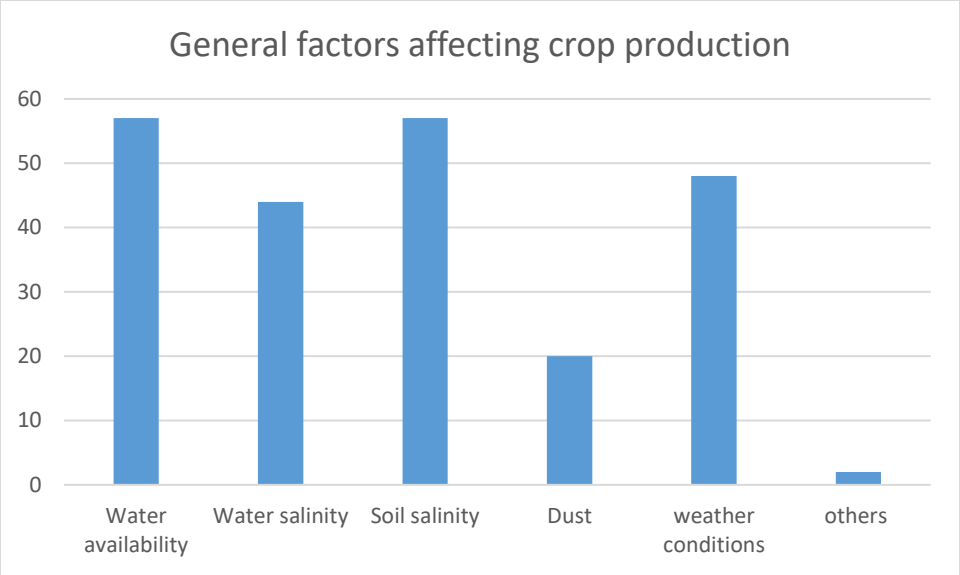


Fig. 2: General factors affecting crop production in South Shuna area, according to 98 interviewed farmers.

However, when asking about the main causes for losses, farmers stated that diseases and pests were the most important causes (56%) followed by adverse weather, e.g. extreme heat waves (53%), soil-related issues like nutrient depletion (31%) and animals like wild boar, stray dogs and birds (30%), see Fig. 3.

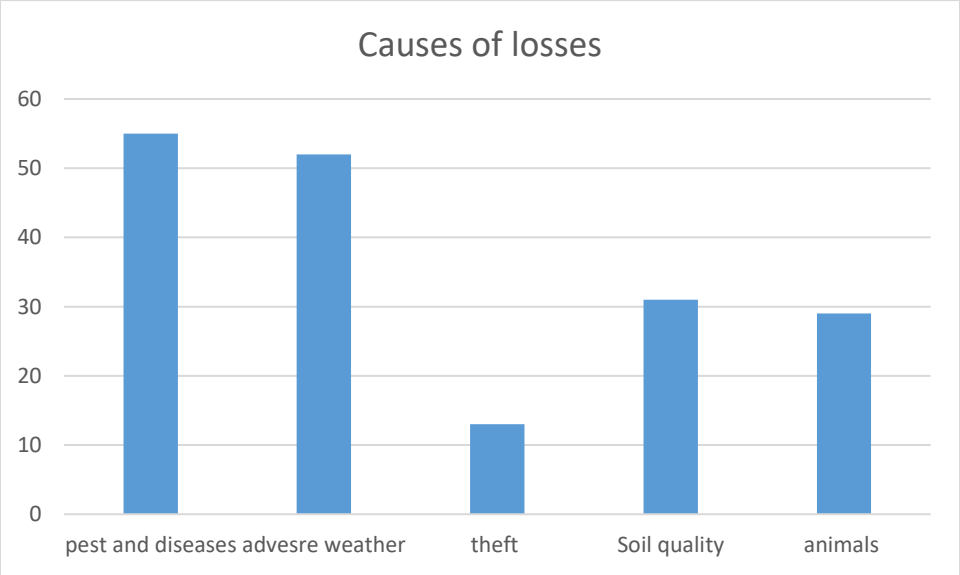


Fig 3. Main causes of losses in crops according to the opinion of 98 farmers in South Shuna.

When asking about the type of birds that feed on planted crops, the first question was about the ability of the farmers to distinguish species and identify the myna (as help, pictures were shown or sent to the interviewees). Nearly one quarter of the famers were very familiar with the common myna, and was seen at or near their farms (22%). When asked about the most harmful birds to agriculture, White-spectacled Bulbuls and Sparrows were considered most harmful, while common mynas had a marginal effect (Fig. 4). According to their general perception (i.e. not just based on the their personal observations in their farms), most interviewed farmers did not consider the common myna as a threat to agriculture, but nearly half (43%) of the 21 farmers who know this bird well, state that common myna is a serious threat to fruits like grapes, although only a small minority stated that their own crops are affected by this species (Fig. 4). These included a small number of farmers of vegetables, dates and bananas. These farmers stated the mynas would occasionally feed on leaves and fruits, in one case even on Zucchini (Squash).

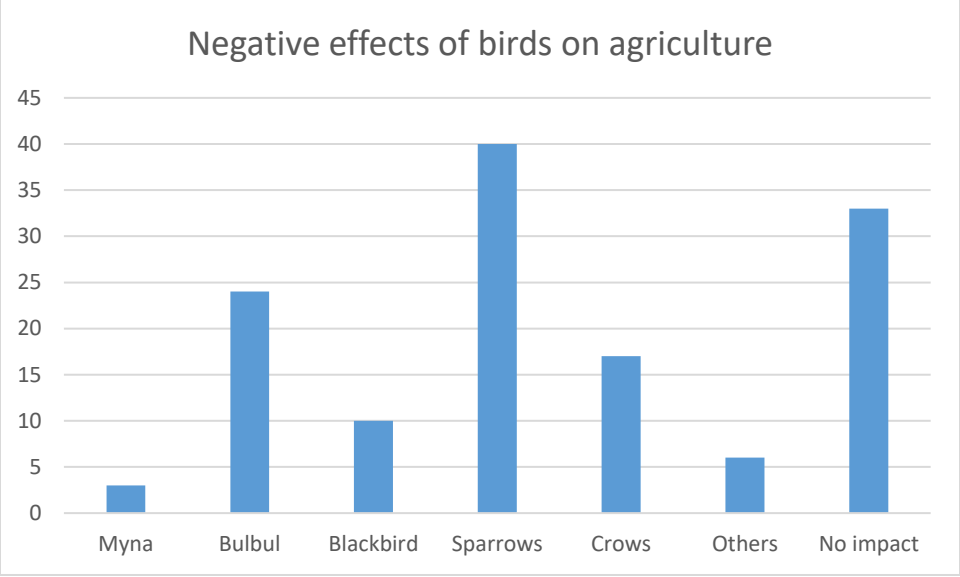


Fig. 4: Number of farmers considering various bird species as cause of losses in agriculture. Interviews carried out with 98 farmers in South Shuna.

Conclusions:

Farmers stated that general, physical factors like lack of water and high salinity of water and soil, and weather conditions during the planting seasons (like prolonged heat) were the most important factors for agricultural production in the south Shuna area, probably because these are difficult to control by the farmers themselves. Pests and adverse weather were considered most important causes for the losses they experienced, followed by other causes like animals, mainly stray dogs, wild boards and birds.

Common mynas have a marginal effect on agriculture in the south Shuna area. They are currently not considered a main threat to agricultural production or the livelihood of local farmers. Mynas encountered at and around farms apparently feed mainly on food waste, insects and only occasionally on fruits and leaves. This low impact is probably due to the type of agriculture (mainly vegetables) and habitat in the southern Jordan Valley area. Most mynas in this area were actually observed near human habitation where they feed on food waste and use man-made structures for nesting.

Half of the interviewees who knew the common mynas, stated that it has a negative impact on agriculture although most of them were not personally affected. This perception could have various reasons, but it indicates that losses could have been reported by farmers from other parts of Jordan. Thus, we recommend further studies in different parts of western Jordan where mynas inhabit agricultural areas with different types of crop. We also recommend continuous monitoring as (a) habitat, crops and other environmental conditions may change, thus changing the myna's diet and feeding behavior, and (b) farmers may become more aware of the possible impacts of mynas, given that over 75% of the interviewed farmers did not know or distinguish the common myna.

B) Impacts of Common Myna on wild birds in Wadi Gharba and its surroundings

Over 50 hours of observations has been spent observing birds at Wadi Gharba and its surroundings. Common mynas in 2023 are limited to two or three sites near Wadi Gharba: The main road leading to the Baptism site, the old "Talupi" restaurant and probably the military facility, which was not visited this year, but a pair was observed there a few years ago.

Observations did not show that Common mynas use the wetland habitat in Wadi Gharba and interactions with native birds there were not observed, including birds that nest in holes like bee-eaters and kingfishers. Some interaction happened with house sparrows attempting to nest in a cement electricity pole on the main road. The result was apparently taking over of the nest site by the common myna. Cement electrical poles along the main roads are perhaps the most favored nesting sites of common myna in the Jordan Valley; but these sites are not used by other native species except for the House Sparrow which generally does not seem to have declined and it is still a very common species.

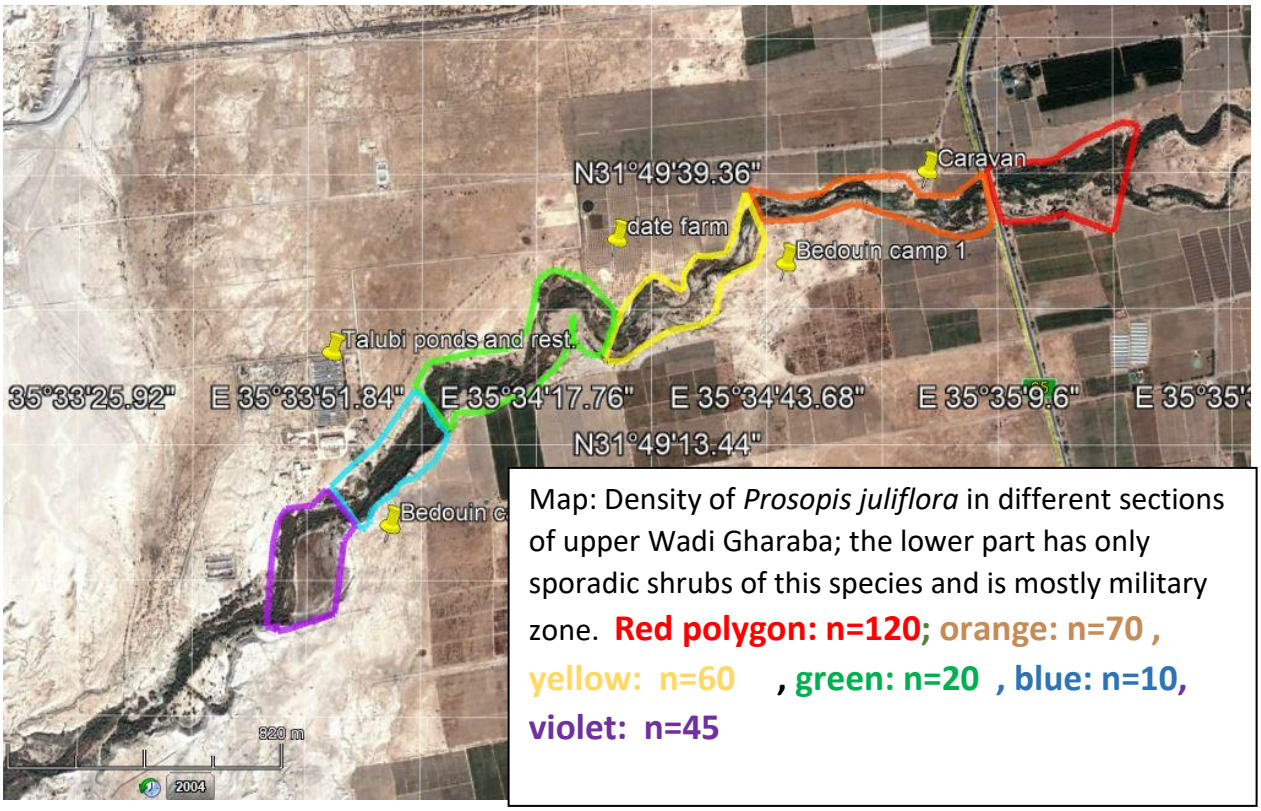
As mentioned in the previous section, common myna in the south Shuna area are often near human habitation and farms and seldom do they use natural habitats. Food seems to be abundant along roads and at containers used to dump waste. This may be different in other parts of Jordan with different habitat and conditions so the apparently low impact in the Jordan Valley cannot be generalized to all parts of Jordan where the common myna is present. Furthermore, monitoring the invasive species and their impacts should continue in this study area and in other parts of Jordan.

C) Monitoring of *Prosopis juliflora* and *Acridotheres tristis* in Wadi Gharba

The common mynah did not increase since 2019 at Wadi Gharaba (Jordan BirdWatch 2019). As for the invasive, alien mesquite, a survey early 2023 revealed c. 325-350 trees and shrubs in the wadi, which means that the number possibly increased slightly. Of importance is the increase of *Prosopis juliflora* shrubs in a section (blue in Fig. 5) where the species was nearly absent four years ago. This section with marshland conditions has become degraded due to overgrazing,

which favors invasion by alien mesquite shrubs while causing a drastic decline in nesting Dead Sparrows.

The continuous grazing by camels every winter is one of the most important threats to the bird habitats and we will urge again the forestry department for better implementation of the laws protecting the Tamarisks from grazing occuring at the site.



Map: Density of *Prosopis juliflora* in different sections of upper Wadi Gharaba; the lower part has only sporadic shrubs of this species and is mostly military zone. **Red polygon: n=120; orange: n=70 , yellow: n=60 , green: n=20 , blue: n=10, violet: n=45**

Fig. 5: Map showing the main distribution and relative densities of invasive *Prosopis juliflora* along Wadi Gharaba in January 2023.

References:

Hart, L.A., Rogers, A. and van Rensburg, B.J. (2020) Common Myna (Acridotheres tristis Linnaeus, 1766). In: Downs, C.T. and Hart, L.A. (eds) Invasive Birds: Global Trends and Impacts. CAB International, Wallingford, UK, pp. 25–32

Jordan BirdWatch (2019): Baseline survey of invasive *Prosopis juliflora* (Plantae) and *Acridotheres tristis* (Aves) in Wadi Gharaba Special Conservation Area, January 2019. Unpublished report.

Khoury, F., Saba, M., & Alshamlih, M. (2021). Anthropogenic not climatic correlates are the main drivers of expansion of non-native common myna *Acridotheres tristis* in Jordan. Management of Biological Invasions 12(3): 640 – 653. DOI: 10.3391/mbi.2021.12.3.08

Appendix:

أجوبة إستبيان المزارعين حول تأثير طائر المينا

تم ملء 98 استبيان من قبل مزارعين

تأثير طائر المينا المدخل على المحاصيل الزراعية:

1- ما هو نوع المحصول / المحاصيل التي تزرعها خلال السنة
ضع دائرة

1) خضار (حدد:- يرجى العودة الى نموذج اكسل "تفريغ استبيان المزارعين") 58 مزارع قام باختيار الجواب 1
2) موز 21 مزارع قام باختيار الجواب 2
3) تمر 10 مزارع قام باختيار الجواب 3
4) غيره (حدد:- يرجى العودة الى نموذج اكسل "تفريغ استبيان المزارعين") 16 مزارع قام باختيار الجواب 4

2- كم دونم من الارض تستغلها للزراعة
مجموع الدونمات للمزارعين (98 مزارع) 5746 دونم.

3- ما هي اهم العوامل اتي تؤثر على الانتاج الزراعي (محصولك)

1) كمية المياه الموجودة للري وكمية الامطار. 57 مزارع قام باختيار الجواب رقم 1

2) ملوحة المياه. 44 مزارع قام باختيار الجواب رقم 2
3) ملوحة التربة 57 مزارع قام باختيار الجواب رقم 3
4) الغبار 20 مزارع قام باختيار الجواب رقم 4
5) درجات الحرارة (موجات الحر أو الصقيع) 48 مزارع قام باختيار الجواب رقم 5
6) غيره (حدد:- حشرات /عنكبوت احمر/ كلاب ضاله) مزارعيين اثنين قاما باختيار الجواب رقم 6

4- ما هي اهم المسببات لخسارات في الانتاج / كمية المحصول ان وجدت
1) الامراض التي تصيب الزرع (حدد يرجى العودة الى نموذج اكسل "تفريغ استبيان المزارعين")
55 مزارع قام باختيار الجواب رقم 1
2) حالات جوية مثل رياح، موجات حر وجفاف، برد / صقيع 52 مزارع قام باختيار الجواب رقم 2
3) السرقات 13 مزارع قام باختيار الجواب رقم 3
4) نوعية التربة (ملوحة، نقص في المغذيات) 31 مزارع قام باختيار الجواب رقم 4
5) الحيوانات بشكل عام (حدد:- يرجى العودة الى نموذج اكسل "تفريغ استبيان المزارعين")
29 مزارع قام باختيار الجواب رقم 5

5- ما هي انواع الطيور التي تعرفها و تراها في المزرعة / المنطقة التي تزرعها .....
يرجى العودة الى نموذج اكسل "تفريغ استبيان المزارعين"

الصور التالية لثلاثة انواع من الطيور، احدها نوع دخيل (المينا الهندى)

**** يرجى من معبئ الاستبيان اظهار ورقة صور الطيور للمزارع ثم الاجابة عن الاسئلة التالية****

6- من خلال الصور هل يمكنك تحديد طير المينا الهندي؟
- نعم :- 21 مزارع قام باختيار الجواب "نعم"
- لا :- 77 مزارع قام باختيار الجواب "لا"

7- ما هي انواع الطيور التي تؤثرسلبيا على المزروعات في منطقتك / مزرعتك مثلا عن طريق اكل الاوراق أو الثمار
1) المينا 3 مزارعين قامو باختيار الجواب رقم 1
2) البلبل 24 مزارع قام باختيار الجواب رقم 2
3) الشحرور / السوادة 10 مزارع قام باختيار الجواب رقم 3
4) الدويري 40 مزارع قام باختيار الجواب رقم 4
5) الغراب 17 مزارع قام باختيار الجواب رقم 5

6) غيره (حدد :- يرجى العودة الى نموذج اكسل "تفريغ استبيان المزارعين") 6 مزارعين قامو باختيار الجواب رقم 6

7) لا يوجد تأثير سلبي يذكر للطيور البرية 33 مزارع قام باختيار الجواب رقم 7

8- هل تعتبر المينا خطرا على المحاصيل؟ نعم / لا

نعم :- 9 مزارعين قامو باختيار الجواب "نعم"

لا :- 83 مزارع قام باختيار الجواب "لا"

اذا كانت الاجابة نعم حدد:- يرجى العودة الى نموذج اكسل "تفريغ استبيان المزارعين"

9- ما هو مقدار الخسارة المقدرة من المحصول (كنسبة من المحصول وبالدينار) بسبب المينا

..... يرجى العودة الى نموذج اكسل "تفريغ استبيان المزارعين" .....

..... أو بسبب انواع أخرى .....

10- هل لاحظت للمينا أية تأثيرات أخرى على البشر، الحيوانات والطيور الداجنة أو على الطيور البرية؟

3 مزارعين فقط قالو انه (ياثر على الطيور الاخرى مثل الحمام و العصافير من خلال طردهم من اعشاش(مسكنهم) و طائر مسالم للبشر و يمكن تربية في المنزل و احتمالية نقل الامراض

هل تريد إضافة اية ملاحظات؟

يرجى العودة الى نموذج اكسل "تفريغ استبيان المزارعين"