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Report of a *Lactuca* collecting expedition in Armenia and Azerbaijan

Itinerary, collected material and data

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Picture front page: *Lactuca georgica* growing alongside a cereal field in NE Azerbaijan (FGK 227)

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Foreword

The mission of the Centre for Genetic Resources, the Netherlands (CGN) is to contribute to the conservation, development and sustainable use of plant, animal and forest genetic resources, and hence to global food security, a more sustainable production, rural development, and the conservation of cultural heritage.
To that end, CGN currently holds collections of over 20 crops and a total number of accessions of more than 22,500 of interest to the Dutch breeding sector and other users.

To contribute to an effective global system of *ex situ* collections, for each of its collections CGN has analysed the coverage of the crop genepool by the germplasm in its own collection and those of others. In a number of cases, CGN has been able to identify gaps in the total set of collections of a specific crop. Some genetic diversity that is known or can be assumed to exist, appeared poorly represented or even absent from the genebank collections. Such cases warrant new collecting missions, if we wish to conserve as wide a diversity for the crop genepool as possible.

The wild relatives of *Lactuca* form such a case. Therefore in 2013 CGN carried out collecting missions in Armenia and Azerbaijan, in close collaboration with its local counterparts. The present report provides details of the results these collecting missions. Dutch breeding companies sponsored the mission, a fact that is duly recognized and appreciated.

During the mission 115 seed samples from 97 sites were collected. Upon regeneration, the samples will be made available under the terms and conditions of the Standard Material Transfer Agreement of the International Treaty.

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1. Introduction

Collecting wild relatives of lettuce (*Lactuca sativa* L.), and especially *Lactuca* species endemic to the Trans Caucasus, was the aim of this expedition, which made this expedition a single crop expedition. In the international *Lactuca* database (http://documents.plant.wur.nl/cgn/pgr/ ildb/) 11697 *Lactuca* accessions are present including 10225 accessions of *L. sativa*. Of the remaining 1472 accessions, the wild relatives with the highest numbers of accessions are *Lactuca serriola*, *L. virosa* and *L. saligna* with 993, 141 and 121 accessions respectively. These species belong to genepool I or II (Table 1; Harlan & de Wet 1971). The other wild relatives from genepool I and II are present with only a few accessions. However wild relatives of lettuce are becoming increasingly important for the breeding of new lettuce varieties (Lebeda *et al.* 2014, Van Treuren *et al.* 2013).

Lactuca species	genepool	# of accessions present in the ILBD	distribution area	present in the Trans Caucasus
sativa	I	10225	cultivated worldwide	x
serriola	I	993	W Eurasian	x
aculeata	I	2	Near East	x
altaica	I	7	W Asia - Caucasus	x
azerbajanica	I	0	NW Iran	x
georgica	I	1	Trans Caucasus	x
scarioloides	I	0	Near East	x
dregeana	I	4	South Africa	x
saligna	II	121	W Europe - Caucasus	x
virosa	II	141	SW Europe - N Africa - W Asia	x
quercina	III	4	SW Europe - Caucasus	x
tatarica	III	8	Continental Europe - C Asia - N America	x
sibirica	III	1	N Europe - N Asia - N America	
viminea	III	20	Europe - N Africa - Near East - C Asia	x

Table 1. *Overview of Lactuca species occurring in various genepools of L. sativa, the number of accessions present in the International Lactuca DataBase (ILDB; http://documents.plant.wur.nl/cgn/pgr/ildb/), their distribution area and their presence in the Trans Caucasus (based partly on Lebeda et al. 2004 and van Treuren et al. 2012).*

The countries in the Trans Caucasus have not been sampled to a large extent as can be seen in Figure 1. Based on the fact that many *Lactuca* species from genepool I (except *L. serriola*) are present with limited numbers in *ex situ* genebanks worldwide and that these species can be found in the Trans Caucasus (Table 1), was the rationale to carry out the present collecting expedition.

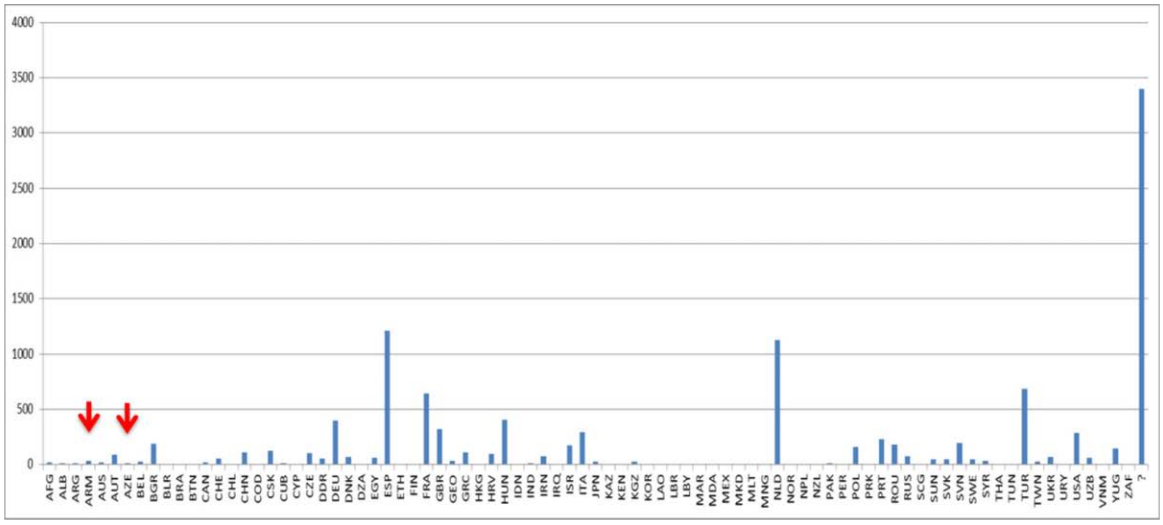

Figure 1. *The number of Lactuca accessions present in ex situ genebanks worldwide based on the ILDB; red arrows indicate Armenia and Azerbaijan.*

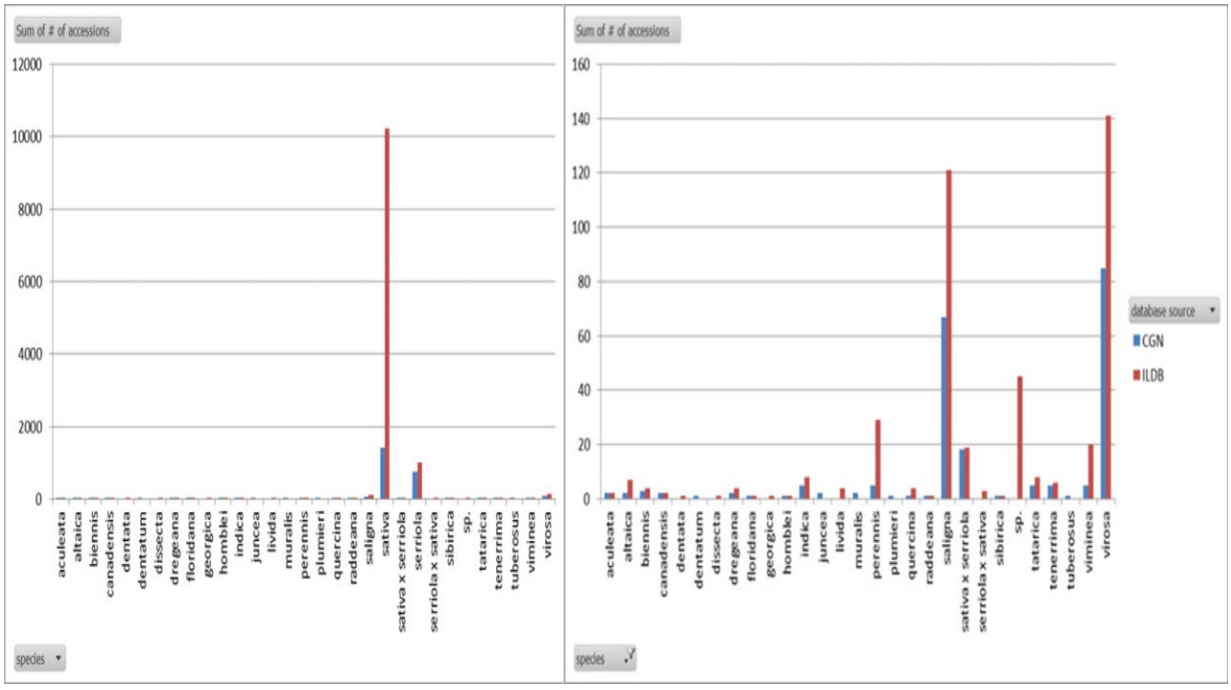

Figure 2. *A comparison per Lactuca species of the number of accessions present in collections worldwide compared to the CGN collection. The left figure includes all Lactuca species and the right figure includes all species except L. sativa and L. serriola (data source: ILDB).*

The *Lactuca* collection of CGN is the largest worldwide with 2392 available accessions currently present. In Figure 2 a comparison is given of the content of the CGN *Lactuca* collection versus the worldwide *Lactuca* collection as presented in the ILDB. In the left part of the figure all species are included and in the right part of the figure the data for

L. sativa and *L. serriola* are excluded which allows for a better comparison of the accessions present in the CGN collection and the worldwide collections.

In ten previously carried out collecting expeditions by CGN also *Lactuca* was collected. In 1990 and 1991 also *Lactuca* collecting took place in the Trans Caucasus by L. Frese, this involved *L. serriola* and *L. saligna* (Table 2).

year	country	collector	sativa	saligna	serriola	viminea	virosa	aculeata	juncea	spp	total
1976	Israel	Roelofsen		22	97			1	1		121
1985	Egypt	vd Meer	9								9
1986	Egypt	vd Meer	13								13
1989	Bulgaria	Boukema			4						4
1990	Turkey	de Meijer		3	15					3	21
1990	Armenia/Dagestan	Frese			10	1	10				21
1991	Dagestan/Georgia	Frese		4	27						31
1994	Italy	Frese	9	1	11						21
1997	Uzbekistan	v Soest			57						57
1999	Uzbekistan/Kyrgistan	v Soest			23						23
total			31	30	244	1	10	1	1	3	321

Table 2. *Previous collecting expeditions carried out by CGN in which also Lactuca species were sampled.*

In 2013 a Memorandum of Understanding adopting the standard Material Transfer Agreement (sMTA) of the Internal Treaty for Plant Genetic Resources for Food and Agriculture (IT-PGRFA), as a basis for distribution, was signed between CGN and the national authorities on access and benefit sharing in Armenia and Azerbaijan (Appendix 1). This document formed the legal basis of the expedition.

2. Objectives of the expedition

There were two major aims of this single crop expedition namely:

1. to broaden the *Lactuca* collection of CGN by collecting *Lactuca* and its wild relatives for breeding and research purposes, and
2. to contribute to the international need for the conservation of PGR.

3. Members of the collecting team

Collecting took place in Azerbaijan and Armenia, therefore there were two collecting teams namely:

Collecting team in Azerbaijan:

- Vahid Farzaliyev PhD, Central Botany Gardens, Azerbaijan National Academy of Sciences, Badamdar Street 40, Baku-AZ1073, Azerbaijan; E-mail: v.farzaliyev@yahoo.co.uk
- Niyazi Guliyev MSc, Genetic Resources Institute, Azerbaijan National Academy of Sciences**,** Azadlig Avenue 155, Baku-AZ1106 Azerbaijan; E-mail: n.guliyev@yahoo.com

Collecting team in Armenia:

- Gayane Melyan PhD, Scientific Center of Agrobiotechnology, 1 Isi-Le-Mulino Street, 1101 Echmiadzin, Armenia. E-mail: gmggmg65@mail.ru
- Arzuman Tonoyan, Agricultural Adviser, Agricultural assistance center of Armavir region, RA, Str.Abovyan 71, 0901 Armavir, Armenia. E- mail: arzumanext@inbox.ru
- Ivan Gabrielyan PhD, Department of Higher Plant Taxonomy, Institute of Botany of NAS RA, Str. Acharyan 1, 0063 Yerevan, Armenia. E-mail: ivangabrielyan@yahoo.com

Both collecting teams included Chris Kik PhD, Centre for Genetic Resources, the Netherlands (CGN), Droevendaalsesteeg 1, 6708 PB, Wageningen, the Netherlands; E-mail: chris.kik@wur.nl.

4. Exploration area and expedition period

For the collecting expedition in Azerbaijan, Baku was chosen as the main basis for the expedition, whereas in Goycay, Ganca, Calilabad and Imisli 1-2 nights were spent. In Armenia, Jerevan was the main basis for exploration with Goris as a minor basis for exploration. For the field work in Azerbaijan a Lada 2017 was used and in Armenia a Lexus IS30005 and a Mitsubishi Pajero. In both Armenia and Azerbaijan mostly one of the collecting team members drove the car. Temperatures during daytime in both countries varied between 25-35 °C throughout the collecting period.

The sampling period of the collecting expedition was carried out from July 8 to August 8 and collecting took place in Azerbaijan from July 8 – July 20 and in Armenia from July 21 to August 8. Collecting started in Azerbaijan, because most of the country lies on a much lower elevation compared to Armenia. Consequently plant development in

Azerbaijan is around 2 weeks ahead of Armenia. In the collecting periods in both countries still unripe seeds were encountered in several locations, but mostly just ripened seeds and mature seeds could be collected. The duration of the collecting trip in both countries proved to be sufficient, although in hindsight a collecting trip in the north part of Azerbaijan (Caucasus area) in order to collect more *L. georgica* and *L. altaica* and a more elaborate search for *L. aculeata* in Armenia would also have been also interesting.

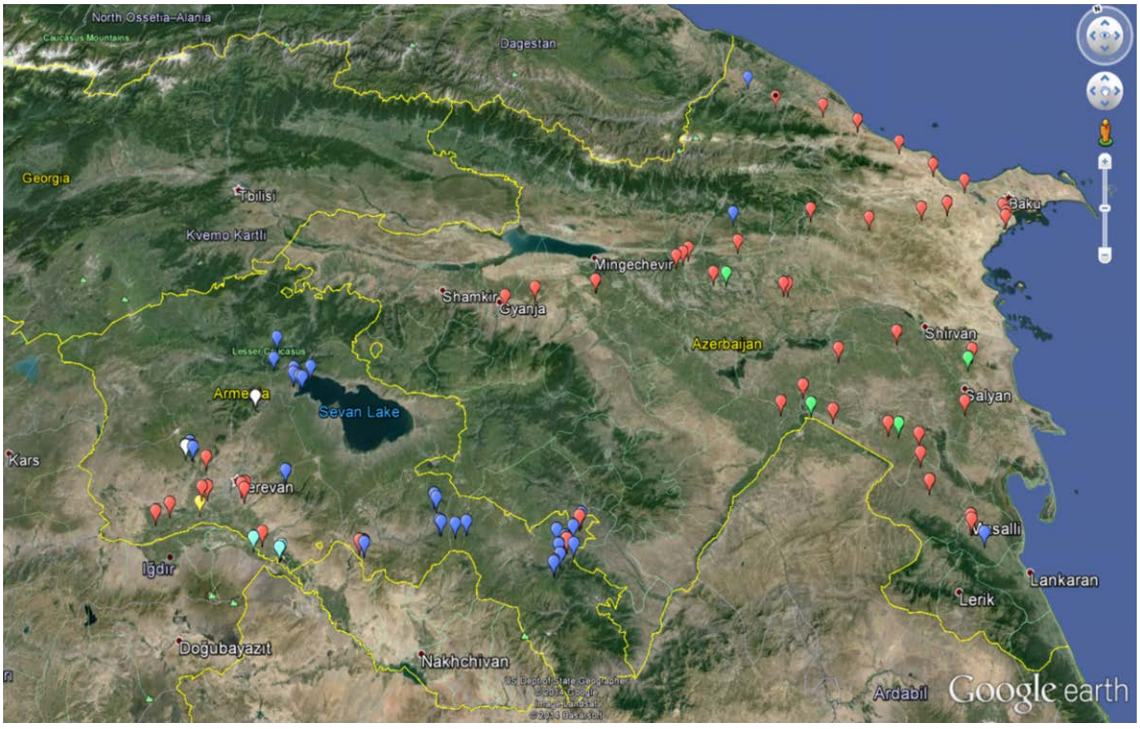

Figure 3. *Map of the collecting area in Armenia and Azerbaijan with the Lactuca collecting sites indicated; red: L. serriola, red with dot: L. altaica, blue: L. georgica; green: L. saligna, white: L. quercina, yellow: L. sativa, turquoise: L. tatarica (see also Appendix 3).*

5. Data collecting, sampling procedure and seed cleaning

A field collecting form based upon a modified multi-crop passport descriptor list (MCPD) was used to document the passport data of the accessions sampled (Appendix 3). All sampled material received a so-called collecting number, in this case MGTKxxx and FGKxxx for the samples collected in Armenia and Azerbaijan respectively (MGTKxx: Melyan-Gabrielyan-Tonoyan-Kik followed by a number and FGKxx: Farzaliyev-Guliyev-Kik followed by a number). Latitude, longitude and altitude were determined via GPS

(Garmin, eTrex series Venture HC) with an inaccuracy of 1-5 meters. Latitude and longitude were recorded using as map datum WGS84 and position format hddd°mm.mmmm. Pictures were taken of all collecting sites and occasionally a video was made. All accession data collected are presented in Appendix 4.

As a rule of thumb before starting to collect at a location at least ten individual plants needed to be observed at first glance. The area explored per accession varied from ca. 0.1-1 ha. Seeds of a plant were collected in a 20 x 50 cm^2 glassine bag by putting the bag over (part of) the inflorescence of the plant with visible achenes, bending the top of the plants downwards and subsequently shaking the bag in order to release the achenes (Photo 1 and 2).

Photo 1. *Mature L. serriola plant with visible achenes (FGK 204)*

Photo 2. *Collecting L. serriola (FGK 218) by N. Guliyev.*

If the achenes were not visible from the outside, so when they are still surrounded by an involucre of bracts, it was checked if the seed was already dark coloured and if this was the case then the inflorescences were broken off the plant and put in a bag. During the expedition the glassine bags were mostly kept in a cupboard in a hotel room under ambient room conditions.
Upon arrival at CGN the seeds were transferred to a conditioned storage room with a temperature of 15 °C and 15% relative humidity.

6. Results and discussion

6.1 Pre-expedition 2012

A pre-expedition was carried out in Armenia and Azerbaijan in 2012, the year prior to the actual collecting mission. This approach was followed as on the basis of such a pre-expedition the chances of success of the actual expedition can be better determined and furthermore that the actual collecting expedition could be performed efficiently.

The pre-expedition in Azerbaijan was carried out by V. Farzaliyev and N. Guliyev and in Armenia by G. Melyan and I. Gabrielyan. In Table 2 the results of the pre-expedition in Armenia and Azerbaijan are presented. Given the results obtained it was concluded that a collecting expedition could be carried out successfully.

Table 2. *Results of the pre-expedition carried out in 2012 to identify Lactuca locations.*

country	aculeata	altaica	georgica	quercina ssp quercina	quercina ssp wilhelmsiana	saligna	sativa	serriola	tatarica	virosa	?	total
Armenia	1	0	17	3	5	4	1	68	6	0	5	110
Azerbaijan	0	2	0	0	0	35	0	35	0	10	0	82
total	1	2	17	3	5	39	1	103	6	10	5	192

6.2 Collecting expedition 2013

In total 115 *Lactuca* populations originating from 97 sites were collected during the expedition (Table 3). In Armenia slightly more populations were collected. The number of species and especially the number of populations collected per species differed between both countries. In Armenia seven species were collected whereas in Azerbaijan four species. Furthermore in Azerbaijan predominantly *L. serriola* was collected and in Armenia *L. georgica*. The latter difference was also due to the fact that collecting in Armenia was more focussed on *L. georgica* based on the results of the pre-expedition, although in this country also large numbers of *L. serriola* populations were present. However these were not sampled as already a large number of *L. serriola* populations were sampled in Azerbaijan.

Table 3. *The number of Lactuca populations from which seeds were collected during the collecting expedition carried out in 2013 in Armenia and Azerbaijan.*

country	altaica	georgica	quercina ssp quercina	quercina ssp wilhelmsiana	saligna	sativa	serriola	tatarica	total
Armenia	0	34	3	5	1	2	17	3	65
Azerbaijan	2	3	0	0	5	0	40	0	50
total	2	37	3	5	6	2	57	3	115

6.2.1. Crop wild relatives of lettuce

a. *Lactuca altaica*

At two locations (FGK 224 and 226) Lactuca plants were found that had the inflorescence shape of *L. serriola* and the leaf morphology of *L. saligna*. The populations were located in NE Azerbaijan. FGK 224 was found along a steep road talus and FGK 226 in a riverbed. As the phenotype of the plants resembled the

description *of L. altaica* (saligna type leaves and serriola type inflorescence) and fell into the reported distribution area of *L. altaica* (Zohary 1991), we tentatively identified these plants as *L. altaica.*

Photo 3. *Overview of collecting site FGK 226.*

Photo 4. *A putative L. altaica plant which is found in the neighbourhood of Qaracay, Azerbaijan (FGK 226).*

b. *Lactuca georgica*

L. georgica is an endemic species of the Trans Caucasus (Zohary 1991). The species belongs to genepool I of *L. sativa* and one would expect to find many accessions of this species in genebanks worldwide as many genes from CWR of lettuce have been used for breeding of new cultivars (Lebeda et al 2007). Surprisingly however only a few accessions of this species are maintained in genebanks worldwide (see Fig 2). During the present expedition 34 accessions were collected in Armenia and three in Azerbaijan. The *L. georgica* populations collected were found both in open and closed vegetations (Photo 5 and 6) mostly along roadsides.

Photo 5. *L. georgica growing in a closed vegetation (MGTK 233)*

Photo 6. *L. georgica growing in an open vegetation (MGTK 209)*

Two different leaf shapes were observed in *L. georgica* populations (see Photo 7). On the basis of the pictures taken from the various populations, it was observed that in eight populations only the lacinate-dentate form was present, that in 18 populations only the runcinate-pinnatisect form was observed and that in three populations both forms were found. From the rest of the populations (n=8) the type of leaf could not be established on the basis of the pictures taken.

Photo 7. *The two different leaf shapes of L. georgica observed: on top the runcinate-pinnatisect form and below the lacinate-dentate form.*

L. georgica occurred mostly above 1000 m altitude, with the exception of population FGK 208, FGK 227, FGK 233 which were found in Azerbaijan and occurred on altitudes of 737, 342 and -19 meters. In their ecology *L. georgica* and *L. serriola* resemble each to a large extent as both of them prefer ruderal habitats. However *L. serriola* mostly occurs in ruderal habitats below 1000-1500 m and *L. georgica* above 1000-1500 m.

Table 4. *Occurrence of L. serriola and L. georgica on different altitudes in the Trans Caucasus.*

species	<1000 m	1000-1500 m	>1500 m	?	total
L. serriola	46	8	2	1	57
L. georgica	4	9	22	2	37
total	50	17	24	3	94

Both species can also be distinguished on the basis of their leaf colour as *L. serriola* has a more dark green leaf colour and *L. georgica* a more light green colour and on the colour of the seed as *L. serriola* has brown seed and *L. georgica* black seed.

Photo 8. *Comparison of L. serriola (forma serriola; left) and L. georgica (forma runcinate-pinnatisect; right)*

c. *Lactuca quercina*

Lactuca quercina is described as a woodland species (Lebeda *et al.* 2004) and this is certainly true for ssp. *quercina* (also known as *L. chaixii*) that we found in Armenia, but not for ssp. *wilhelmsiana.* Subspecies *wilhelmsiana* was found in closed vegetations but still with considerable influx of the sun; the subspecies is easily recognized by its slender pinnatisect leaves (see Photo 9). We found five locations in Armenia where the species occurred.

Photo 9. *The two different leaf shapes belonging to the two different subspecies of L. quercina: left ssp. wilhelmsiana and right ssp. quercina.*

Subspecies *quercina* (formerly known as *L. chaixii*) is a real woodland species but it occurs in locations where direct sunlight can occur during daytime. Subspecies *wilhelmsiana* can be easily recognized by its laciniate-dentate leaves (see Photo 8). We found the subspecies in four locations in Armenia.
Lebeda *et al.* (2004), citing Ferakova (1977), wrote that ssp. *quercina* is a relic species and occurs in Europa and that ssp. *quercina* is replaced by ssp. *wilhelmsiana* in the eastern and southern parts of its distribution (Anatolia and the Caucasus). However we found that in the Trans Caucasus both ssp. are present (Photo 10 and 11).

Photo 10. *Mixed broadleaf oak forest where L. quercina ssp quercina was found (MGTK 248).*

Photo 11. *Habitat where L. quercina ssp wilhelmsiana was found (MGTK 215).*

d. *Lactuca saligna*

The six *L. saligna* populations that were found occurred in open vegetations on sandy wastelands, in semi-closed grassland vegetations or along metalled roads, the latter habitat with almost no vegetation at all (Photo 12). Mostly only a few (less than 10-20 individuals) were found which co-occurred with other *Lactuca* species.

Photo 12. *L. saligna population occurring along a metalled road (FGK 218).*

e. *Lactuca serriola*

A large number of *L. serriola* populations (n= 59; ARM = 15 and AZE = 44) were found during the collecting mission both in Azerbaijan and Armenia. The species is a ruderal species and can be found in disturbed and open vegetations (Photo 13). It occurs mainly in altitudes below the 1000-1500 m (see also Table 4).

Photo 13. *L. serriola population FGK 212 occuring along a road.*

Two distinct leaf forms were observed in the populations sampled, namely the more runcinate-pinnatisect (*L. serriola* forma *serriola;* sensu Prince & Carter 1977) and the more laciniate-dentate (*L. serriola* forma *integrifolia*; sensu Prince & Carter 1977) leaf morphology (Photo 14).

Photo 14. *The two leaf forms of L. serriola: on the left the laciniate-dentate leaf form and on the right the runcinate-pinnatisect form.*

Forma *serriola* was always present the *L. serriola* populations sampled and now and then also forma *integrifolia* was observed amids forma serriola. Populations with only forma *integrifolia* were not observed (Table 4).

Table 4. *The frequency of occurrence of the two leaf forms of L. serriola in the populations sampled in Armenia and Azerbaijan.*

country	*serriola*	*integrifolia*	total
Armenia	10	7	17
Azerbaijan	30	10	40
total	40	17	57

The distribution of *L. serriola* forma *integrifolia* is poorly known (Lebeda *et al.* 2004) and as no literature is present on the existence of forma *integrifolia* from the Trans Caucasus, this is the first report on the existence of forma *integrifolia* in the Trans Caucasus.

f. ***Lactuca tatarica***

This species belongs to genepool III of *L. sativa*. Therefore only a few populations were collected. All (three) populations of this species that were found occurred in the Araz river basin (salty soil) on the border between Armenia and Turkey in a littoral habitat (Photo 15).

Photo 15. *Habitat of L. tatarica (MGTK 204)*

The species can be easily recognized by its purple flowers (Photo 16).

Photo 16. *Flowering L. tatarica (MGTK 204).*

h. Other *Lactuca* species observed

L. aculeata

Two populations were found of this species in Armenia but no seeds were present as its flowering time is in August/September. The first population was found south east of Jerevan on a steep talus next to a road (Photo 17). The population grew on a clay soil. A closer view of a *L. aculeata* plant in its surrounding vegetation can be seen in photo 18. The location where a few *L. aculeata* were found was more to the east of Jerevan on the steps of a sight seeing place of Mount Ararat.

Photo 17. *Overview of L. aculeata habitat close to Jerevan.*

Photo 18. *Close-up of a L. aculeata plant and its surrounding vegetation.*

6.1.2 Co-occurence of *Lactuca* species in the same habitat

It was observed during the expedition that *Lactuca* species in ca. 17% (= 17/99) of the cases co-occurred in one habitat (Table 5).

Table 5. *Co-occurrence of Lactuca species in the Trans Caucasus. The number of locations of joint occurrence of two species is indicated. The numbers between brackets indicate the sole occurrence of a species in a location.*

	ser	sal	geo	tat	que	alt
ser	(47)	5	4	1	1	1
sal		(0)	1		1	
geo			(30)		4	
tat				(2)		
que					(2)	
alt						(1)

Co-occurence did not take place randomly among the *Lactuca* species collected. Especially *Lactuca serriola* co-occured with all other *Lactuca* species; this occurred ca. 20% (= 12/59) of the cases.
In one habitat (MGTK 214; Antarut, Armenia) four *Lactuca* species co-occurred together. The species concerned were *L. serriola*, *L. saligna*, *L. georgica* and *L. quercina* ssp *wilhelmsiana*. The habitat where the four species co-occurred can be described as an open grassland vegetation with patches of shrubs; the altitude of the location was 2013 meters.

6.1.3 Cultivated lettuce

Only two populations (MGTK 220 and 221) were collected during the expedition in home gardens of farmers (Photo 19). These populations were collected in Griboedov (Armenia), a village south west of Jerevan.

The lettuce type collected was a cos (=romana) and was said to be in both cases a landrace. Seeds of these landraces were regenerated every year on ca. 15-20 plants. In Armenia approximately 20 hectares of lettuce is cultivated and the cultivation takes place year round. In the winter cultivation takes place in (mostly plastic) greenhouses and in the summer in open field cultivations. During the summer season the top of the lettuce plant is cut off which makes it possible to sell a vertical bunch of lettuce leaves per plant as this is the type of lettuce consumers are used too. In winter it is not needed to cut off the top of the plant to obtain a vertical bunch of leaves per plant. In Armenia also lettuce from abroad is grown, this is mostly frisee (=cutting; red and green) lettuce and this type is mostly used for decoration. In Azerbaijan no lettuce cultivation takes place and consequently the crop is imported.

Photo 19. *Collecting MGTK 220 in Griboedov, Armenia. From left to right: spouse of Aghajanyar Gohaz, Gayane Melyan, Arzuman Tonoyan and Chris Kik.*

7. Conclusions

a. A Memorandum of Understanding, based upon the sMTA of the IT-PGRFA, was signed between the national authorities in Armenia and Azerbaijan on the one hand and CGN on the other hand. This MoU formed the legal basis of this expedition.
b. The *Lactuca* collection of CGN could be substantiated with 115 unique accessions. Next to the collecting of two landraces of lettuce, 113 accessions of lettuce crop wild relatives were collected amongst which 37 accessions of *L. georgica*, an endemic species of lettuce genepool I, which is very rare in genebanks worldwide.
c. It was not always clear during collecting which *Lactuca* species was collected. Problems occurred with *L. altaica* and *L. virosa*. In case of the two *L. altaica* populations sampled the inflorescence resembled *L. serriola* whereas the leaf shape resembled *L. saligna*. During regeneration of the material in 2014 it was concluded that both populations sampled were correctly identified as *L. altaica*. In case of *L. virosa* it turned out during regeneration that the material collected was *L. serriola* forma *integrifolia*.
d. Although a substantial number of *Lactuca* accessions have been collected, more *Lactuca* accessions can be collected especially in Azerbaijan on the south side of the Larger Caucasus where *L. georgica* should be present.

e. No *Lactuca* breeding takes place in Armenia and Azerbaijan and also no *Lactuca* seeds could not be obtained in bazars during the expedition. No lettuce cultivation was encountered in Azerbaijan and only around 20 hectares of lettuce cultivation in Armenia took place.
f. The cultivation of lettuce in Armenia occurred in home gardens. The original type of lettuce cultivated is Cos, which is used for consumption. Cultivation took place during the whole year in greenhouses and in open-field gardens.

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9. Acknowledgements

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Appendix I. Memorandum of Understanding

Memorandum of Understanding concerning the acquisition of plant genetic resources for food and agriculture

The undersigned, dr. Z. Akparov, Director of the Genetic Resources Institute, Azerbaijan National Academy of Sciences, Baku, Azerbaijan, the Competent National Authority on Access and Benefit Sharing for the Convention on Biological Diversity in Azerbaijan and dr. L. Visser, director of the Centre for Genetic Resources, the Netherlands (CGN), Wageningen, the Netherlands herewith declare the following.

Recognising the provisions of the Convention on Biological Diversity, including the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization, placing the authority to determine access to genetic resources with the national governments and making access subject to national legislation,

Recognising the adoption of the Standard Material Transfer Agreement for the access of plant genetic resources in the Multilateral System of the International Treaty by the Governing Body of the International Treaty for the purposes of food and agriculture,

Recognising the policy of the Dutch government to provide access to other plant genetic resources than listed in Annex of the International Treaty under the terms and conditions of the Standard Material Transfer Agreement,

Agree that this policy will also be adopted to regulate the future access to germplasm in the CGN collection that is to be collected in Azerbaijan,

Decide to adopt the terms and conditions of the Standard Material Transfer Agreement for the distribution of vegetable germplasm in particular *Lactuca* species to be collected by Genetic Resources Institute, Azerbaijan National Academy of Sciences and CGN in 2013.

Genetic Resources Institute, Azerbaijan National Academy of Sciences, Azadlig Avenue 155, Baku-AZ1106 Azerbaijan

Dr. Z. Akparov, Director Date 05.03.13.

Z. Akparov

The Centre for Genetic Resources, the Netherlands (CGN), the Netherlands

11/03/2013

Dr. L. Visser (Director) Date

Attachment: standard material transfer agreement (IT-PGRFA)

Appendix II. Expedition collecting form

Armenia – Azerbaijan - the Netherlands *Lactuca* expedition 2013

Team/collector(s) ……*Collecting number*……..

Date……*Photo number*……

Crop name……*Cultivar name*……..

Latin species name……

Locality……

……..

Latitude……*Longitude*……*Altitude*……..

Number of plants in population abundant…frequent …occasional….rare

Topography…swamp…floodplain…level…undulating…hilly…steep…mountainous

Biological status of accession

100) Wild
110) Natural
120) Semi-natural/wild

200) Weedy

300) Traditional cultivar/landrace

500) Advanced/improved cultivar

Collecting/acquisition source

10) Wild habitat
11) Forest/woodland
12) Shrubland
13) Grassland
14) Desert/tundra
15) Aquatic habitat

20) Farm or cultivated habitat
21) Field
22) Orchard
23) Backyard, kitchen or home garden
24) Fallow land
25) Pasture

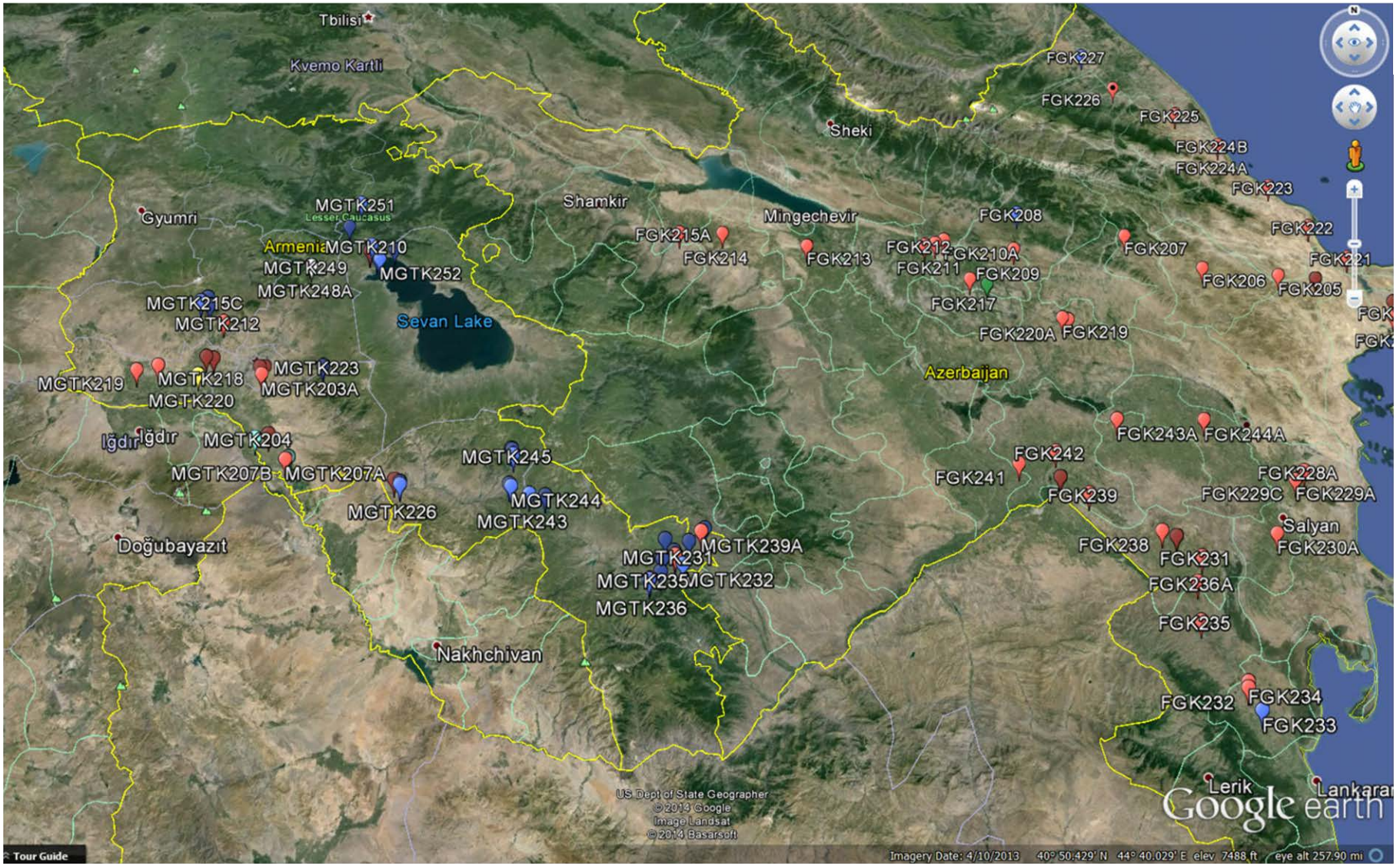
30) Market or shop

60) Weedy, disturbed or ruderal habitat
61) Roadside
62) Field margin

REMARKS
(diseases, pests, other)

Appendix III. Map of locations where collecting took place

Collecting numbers are indicated (FGKxxx and MGTKxxx for *Lactuca* material collected in Azerbaijan and Armenia respectively). Furthermore also the species collected per location are indicated via coloured symbols namely red: *L. serriola*, red with dot: *L. altaica*, blue: *L. georgica*; green: *L. saligna*, white: *L. quercina*, yellow: *L. sativa*, turquoise: *L. tatarica*.


Tbilisi
Kvemo Kartli
Gyumri
Lesser Caucasus
Armenia
Sevan Lake
Shamkir
Sheki
Mingechevir
Azerbaijan
Nakhchivan
Doğubayazıt
Iğdır
Salyan
Lerik
MGTK251
MGTK210
MGTK249
MGTK252
MGTK248A
MGTK215C
MGTK212
MGTK219
MGTK218
MGTK220
MGTK223
MGTK203A
MGTK204
MGTK207B
MGTK207A
MGTK226
MGTK245
MGTK244
MGTK243
MGTK239A
MGTK231
MGTK235
MGTK232
MGTK236
FGK227
FGK226
FGK225
FGK224B
FGK224A
FGK223
FGK222
FGK221
FGK208
FGK215A
FGK214
FGK213
FGK212
FGK210A
FGK211
FGK209
FGK217
FGK207
FGK206
FGK205
FGK220A
FGK219
FGK243A
FGK244A
FGK242
FGK241
FGK239
FGK228A
FGK229C
FGK229A
FGK230A
FGK238
FGK231
FGK236A
FGK235
FGK232
FGK234
FGK233
US Dept of State Geographer
© 2014 Google
Image Landsat
© 2014 Basarsoft
Google earth
Tour Guide
Imagery Date: 4/10/2013 40° 50.429' N 44° 40.029' E elev 7488 ft eye alt 257.90 mi

Appendix IV. List of accessions collected

Passport data of Lactuca accessions collected in Armenia (MGTKxxx) and Azerbaijan (FGKxxx). Date: year-month-date; Latitude and longitude determined via GPS: mapdatum WGS84, position format for longitude and latitude: hddd°mm.mmmm'; altitude in meters; population type: W: wild; L: landrace.

collecting number	photo map	photo nr	date	species name given during expedition	species name given after regeneration	nearest locality name	latitude	longitude	altitude	population type	topography	collecting source	population size
FGK201	103	550-552	20130709	serriola	serriola	Baku, Yeni yasamal	40°23.10300'	049°47.18100'	163	W	undulating	roadside	25-100 plants, few with ripened seeds
FGK202	103	553-558	20130709	serriola	serriola	Baku-Khogahasan	40°20.65920'	049°47.02080'	-30	W	undulating	roadside	25-100 plants, few with ripened seeds
FGK203	103	559-563	20130709	serriola	serriola	Lokbatan	40°19.51800'	049°45.84900'	-27	W	undulating	parking place	25-100 plants, few with ripened seeds
FGK204	103	564-568	20130710	serriola	serriola & saligna	road Baku-Samaxci	40°29.05200'	049°26.11500'	312	W	undulating	roadside	>100 plants, many with ripened seeds
FGK205	103	569-571	20130710	serriola	serriola	Cengi	40°29.90280'	049°15.17580'	371	W	level	roadside	>100 plants, many with ripened seeds
FGK206	103	572-575	20130710	serriola	serriola	Gobustan	40°31.77180'	048°53.15880'	767	W	undulating	roadside	>100 plants, many with ripened seeds
FGK207	103	576-581	20130710	serriola	serriola	Muganli	40°40.03500'	048°32.29980'	854	W	undulating	roadside	25-100 plants, few with ripened seeds
FGK208	103	585-589	20130710	serriola	georgica	Isanovka	40°46.21080'	048°01.97700'	737	W	level	roadside	>100 plants, few with ripened seeds
FGK209	103	590-591	20130710	serriola	serriola	Karameryam-1	40°36.96900'	047°59.32020'	185	W	undulating	field margin	5-25 plants with ripened seeds
FGK210A	103	592-598	20130711	serriola	serriola	Azab	40°39.37020'	047°39.45420'	88	W	undulating	fennel field	25-100 plants; plants with seeds
FGK210B	103	592-598	20130711	virosa	serriola	Azab	40°39.37020'	047°39.45420'	88	W	undulating	fennel field	1-5 plants; few plants with seeds
FGK211	103	599-602	20130711	serriola	serriola	Aghdas-1	40°38.51400'	047°36.80520'	52	W	level	roadside	25-100 plants, many with ripened seeds
FGK212	103	603-605	20130711	serriola	serriola	Aghdas-2	40°38.05500'	047°33.70800'	47	W	level	roadside	25-100 plants, many with ripened seeds
FGK213	103	606-608	20130711	serriola	serriola	Aran-1	40°37.87080'	046°59.99520'	43	W	level	roadside	>100 plants, few in seed
FGK214	103	609-613	20130711	serriola	serriola	Ganja-1	40°41.04480'	046°36.15600'	239	W	undulating	field margin	5-25 plants with ripened seeds
FGK215A	103	614-617	20130711	serriola	serriola	Ganja-2	40°41.07000'	046°23.94900'	367	W	level	roadside	> 100 plants; few plants with ripened seeds
FGK215B	103	614-617	20130711	virosa	serriola	Ganja-2	40°41.07000'	046°23.94900'	367	W	level	roadside	1-5 plants
FGK216	103	619-621	20130712	serriola	serriola	Aran-2	40°37.84080'	047°00.13200'	40	W	level	roadside	>100 plants, few in seed
FGK217	103	622-627	20130712	serriola	serriola	Ucar-1	40°29.54400'	047°45.36300'	14	W	level	roadside - metalled	>100 plants, many with ripened seeds
FGK218A	103	628-636	20130712	serriola	serriola	Ucar-2	40°28.23780'	047°50.06520'	10	W	level	roadside - metalled	>100 plants, many with ripened seeds
FGK218B	103	628-636	20130712	virosa	serriola	Ucar-2	40°28.23780'	047°50.06520'	10	W	level	roadside - metalled	5-25 plants; less than 5 plants harvested
FGK218C	103	628-636	20130712	saligna	saligna	Ucar-2	40°28.23780'	047°50.06520'	10	W	level	roadside - metalled	5-25 plants; less than 5 plants harvested
FGK219	103	638-639	20130712	serriola	serriola	Kurdamir-1	40°19.93320'	048°09.82980'	11	W	level	roadside	25-100 plants, many with ripened seeds
FGK220A	103	640-647	20130712	serriola	serriola	Kurdamir-2	40°19.48020'	048°11.35680'	12	W	level	roadside	>100 plants, many with ripened seeds
FGK220B	103	640-647	20130712	virosa	serriola	Kurdamir-2	40°19.48020'	048°11.35680'	12	W	level	roadside	5-25 plants; 5-10 plants in seed
FGK221	103	650-652	20130714	serriola	serriola	Sumgait	40°34.48800'	049°37.68780'	-6	W	undulating	roadside	25-100 plants, many with ripened seeds
FGK222	103	655-658	20130714	serriola	serriola	Yashma	40°42.63720'	049°28.82580'	-15	W	undulating	roadside	25-100 plants, many with ripened seeds
FGK223	103	659-663	20130714	serriola	serriola	Shurabad	40°53.32200'	049°20.13120'	-3	W	level	roadside	25-100 plants, many with ripened seeds
FGK224A	103	664-673	20130714	serriola	serriola	Siyazan	41°04.90980'	049°08.15700'	29	W	undulating	roadside	25-100 small plants, some in seed

collecting number	photo map	photo nr	date	species name given during expedition	species name given after regeneration	nearest locality name	latitude	longitude	altitude	population type	topography	collecting source	population size
FGK224B	103	664-673	20130714	altaica	altaica	Siyazan	41°04.90980'	049°08.15700'	29	W	undulating	roadside	5-25 small plants, some in seed
FGK225	103	674-676	20130714	serriola	serriola	Shabran	41°13.64580'	048°57.28980'	33	W	undulating	field margin	5-25 plants in seed
FGK226	103	677-697	20130714	altaica	altaica	Qaracay	41°21.11820'	048°39.40680'	349	W	level	river bed	>100 plants; many in seed
FGK227	103	698-704	20130714	georgica	georgica	Balakusar	41°30.99180'	048°31.89120'	343	W	undulating	field margin	5-25 plants, a number with ripened seeds
FGK228A	103	708-713	20130716	serriola	serriola	Salyan-1	39°44.24820'	049°07.28700'	-23	W	level	field margin	25-100 plants; many plants with seeds
FGK228B	103	708-713	20130716	virosa	serriola	Salyan-1	39°44.24820'	049°07.28700'	-23	W	level	field margin	5-25 plants; some in seed
FGK229A	103	714-723	20130716	serriola	serriola	Salyan-2	39°42.27900'	049°04.27800'	-23	W	level	field margin	> 100 plants, many with ripened seeds
FGK229B	103	714-723	20130716	virosa	serriola	Salyan-2	39°42.27900'	049°04.27800'	-23	W	level	field margin	5-25 plants; some in seed
FGK229C	103	714-723	20130716	saligna	saligna	Salyan-2	39°42.27900'	049°04.27800'	-23	W	level	field margin	5-25 plants; some in seed
FGK230A	103	724-727	20130716	serriola	serriola	Salyan-3	39°31.15800'	048°55.72920'	-24	W	level	roadside	>100 plants, many with ripened seeds
FGK230B	103	724-727	20130716	virosa	serriola	Salyan-3	39°31.15800'	048°55.72920'	-24	W	level	roadside	25-100 plants; 10-15 plants in seed
FGK231	103	730-733	20130716	serriola	serriola	Khurmandali	39°26.802'	048°34.633'		W	level	field margin	>100 plants, few in seed
FGK232	103	734-736	20130717	serriola	serriola	Azkivan	39°01.19580'	048°39.15000'	14	W	level	roadside	25-100 plants; many plants in seed
FGK233	103	737-739	20130717	serriola	georgica	Damirci	38°56.93880'	048°41.32620'	-19	W	level	roadside	25-100 plants; 25-50 plants in seed
FGK234	103	742-745	20130717	serriola	serriola	DgAh	39°02.26380'	048°39.46200'	22	W	level	roadside	5-25 plants; many plants in seed
FGK235	103	767-769	20130718	serriola	serriola	Callilabad-1	39°14.08080'	048°30.93480'	31	W	level	roadside	>100 plants; many plants in seed
FGK236A	103	770-778	20130718	serriola	serriola	Callilabad-2	39°21.74400'	048°32.13120'	11	W	level	roadside	>100 plants; many plants in seed
FGK236B	103	770-778	20130718	virosa	serriola	Callilabad-2	39°21.74400'	048°32.13120'	11	W	level	roadside	5-25 plants; less than 10 plants in seed
FGK237A	103	779-785	20130718	serriola	serriola	Ayarli-1	39°31.06620'	048°29.12700'	9	W	level	field margin	25-100 plants, few in seed
FGK237B	103	779-785	20130718	saligna	saligna	Ayarli-1	39°31.06620'	048°29.12700'	9	W	level	field margin	25-100 plants, few in seed
FGK238	103	786-790	20130718	serriola	serriola	Ayarli-2	39°32.19300'	048°25.65480'	16	W	level	roadside	25-100 plants; few plants in seed
FGK239	103	791-794	20130718	serriola	serriola	Imishli-1	39°40.28880'	048°08.42280'	19	W	level	roadside	>100 plants, many in seed
FGK240A	103	795-810	20130718	serriola	serriola	Imishli-2	39°43.80180'	048°01.62320'	22	W	level	fallow land	>100 plants, many in seed
FGK240B	103	795-810	20130718	virosa	serriola	Imishli-2	39°43.80180'	048°01.62320'	22	W	level	fallow land	25-100 plants; few plants with seed
FGK240C	103	795-810	20130718	saligna	saligna	Imishli-2	39°43.80180'	048°01.62320'	22	W	level	fallow land	5-25 plants; few plants with seed
FGK241	103	811-814	20130718	serriola	serriola	Beylagan	39°46.79580'	047°51.28620'	27	W	level	field margin	>100 plants; few in seed
FGK242	103	818-820	20130719	serriola	serriola	Bahramtèpè	39°49.39620'	048°01.51200'	12	W	level	roadside	25-100 plants; plants in flower and with seed
FGK243A	103	821-823	20130719	serriola	serriola	Saatlian	39°56.29680'	048°19.60680'	-1	W	level	roadside	>100 plants; many plants in seed
FGK243B	103	821-823	20130719	virosa	serriola	Saatlian	39°56.29680'	048°19.60680'	-1	W	level	roadside	1-5 plants; few plants in seed

collecting number	photo map	photo nr	date	species name given during expedition	species name given after regeneration	nearest locality name	latitude	longitude	altitude	population type	topography	collecting source	population size
FGK244A	103	824-829	20130719	serriola	serriola	Qarayevka	39°55.88880'	048°43.35900'	-21	W	level	roadside	>100 plants, many in seed
FGK244B	103	824-829	20130719	virosa	serriola	Qarayevka	39°55.88880'	048°43.35900'	-21	W	level	roadside	1-5 plants; all plants in seed
MGTK201A	103	847-851	20130723	serriola	serriola	Irashen	40°08.39220'	044°33.59100'	1107	W	level	roadside	5-25 plants; few plants in seed
MGTK201B	103	847-851	20130723	virosa	serriola	Irashen	40°08.39220'	044°33.59100'	1107	W	level	roadside	1-5 plants; few plants in seed
MGTK202	103	852-853	20130723	serriola	serriola	Erebuni	40°08.37720'	044°32.26200'	1058	W	level	field margin	25-100 plants; few plants in seed
MGTK203A	103	854-858	20130723	serriola	serriola	Nubarashen	40°06.76980'	044°33.02220'	1129	W	level	graveyard	25-100 plants; a number in seed
MGTK203B	103	854-858	20130723	virosa	serriola	Nubarashen	40°06.76980'	044°33.02220'	1129	W	level	graveyard	1-5 plants; 1 virosa in seed
MGTK204	103	859-866	20130724	tatarica	tatarica	Khor Virap	39°52.82220'	044°33.94920'	845	W	flood plain	aquatic habitat	5-25 plants; a number of plants with seeds
MGTK205A	103	877-881	20130724	serriola	serriola	Ararat-1	39°53.60520'	044°37.26600'	874	W	level	field	25-100 plants, few in seed
MGTK205B	103	877-881	20130724	virosa	serriola	Ararat-1	39°53.60520'	044°37.26600'	874	W	level	field	1-5 plants; 1 plant in seed
MGTK206	103	882-887	20130724	tatarica	tatarica	Ararat-2	39°48.68400'	044°43.29480'	858	W	level	aquatic habitat	5-25 plants; many plants in seed
MGTK207A	103	888-890	20130724	serriola	serriola	Ararat-3	39°48.23700'	044°42.55320'	862	W	level	aquatic habitat	5-25 plants; a number of plants with seeds
MGTK207B	103	888-890	20130724	tatarica	tatarica	Ararat-3	39°48.23700'	044°42.55320'	862	W	level	aquatic habitat	5-25 plants; a number of plants with seeds
MGTK208	103	891-894	20130725	georgica	georgica & serriola	Sevan-1	40°35.81820'	044°57.62400'	1960	W	hilly	disturbed habitat	5-25 plants; some in seed; stony habitat
MGTK209	103	904-909	20130725	georgica	georgica	Sevan-2	40°34.26000'	044°59.81280'	1958	W	hilly	roadside	25-100 plants; mature seed inside flower
MGTK210	103	910-911	20130725	georgica	georgica	Tsovaggagh	40°37.35600'	044°58.04220'	1909	W	hilly	disturbed habitat	5-25 plants; mature seed inside flower
MGTK211	103	912-914	20130725	georgica	georgica	Arakhtic	40°36.20220'	045°04.49520'	1906	W	hilly	roadside	5-25 plants; mature seed inside flower
MGTK212	103	915-917	20130726	serriola	serriola	Ashtavuk	40°18.63600'	044°20.62500'	1184	W	undulating	grassland	25-100 plants; 10-20 plants with mature seed in flower
MGTK213	103	918-929	20130726	georgica	georgica	Byuarakan	40°22.33920'	044°16.22520'	1894	W	undulating	grassland	25-100 plants; mature seed inside flower
MGTK214A	103	933-934	20130806	serriola	serriola	Antarut	40°22.64820'	044°15.75600'	2013	W	undulating	grassland	5-25 plants; 5 plants in seed
MGTK214B	103	930-932	20130806	saligna	saligna	Antarut	40°22.64820'	044°15.75600'	2013	W	undulating	grassland	5-25 plants; 5 plants in seed
MGTK214C	103	940-945	20130726	georgica	georgica	Antarut	40°22.66080'	044°15.80220'	2015	W	undulating	grassland	25-100 plants; 30 plants in seed
MGTK214D	103	935-939/946-953	20130726	quercina ssp wilhelmsiana	quercina ssp w	Antarut	40°22.65300'	044°15.88380'	2011	W	undulating	shrubland	5-25 plants; 10 plants in seed
MGTK215A	103	960-968 /972	20130726	quercina ssp quercina	quercina ssp q	Amberd	40°23.32680'	044°13.56480'	2147	W	hilly	wild habitat	5-25 plants; 25 plants with mature seeds
MGTK215B	103	960-968 /972	20130726	quercina ssp wilhelmsiana	quercina ssp w	Amberd	40°23.32680'	044°13.56480'	2147	W	hilly	wild habitat	1-5 plants; few plants with seed
MGTK215C	103	960-968 /972	20130726	georgica	georgica	Amberd	40°23.32680'	044°13.56480'	2147	W	hilly	wild habitat	5-25 plants; 10 plants in seed
MGTK216	103	984-985	20130727	serriola	serriola	Echmiadzin-1	40°10.26720'	044°19.66200'	933	W	level	roadside	5-25 plants; 10 plants in seed
MGTK217	103	986-987	20130727	serriola	serriola	Echmiadzin-2	40°10.62720'	044°17.61600'	931	W	level	roadside	25-100 plants; 10 plants in seed
MGTK218	103	988-992	20130727	serriola	serriola	Armavir-1	40°08.64900'	044°05.22900'	908	W	level	roadside	>100 plants, many in seed

collecting number	photo map	photo nr	date	species name given during expedition	species name given after regeneration	nearest locality name	latitude	longitude	altitude	population type	topography	collecting source	population size
MGTK219	103	993-995	20130727	serriola	serriola	Sardarapat	40°07.54200'	043°59.76180'	928	W	level	fallow land	>100 plants, many in seed
MGTK220	104	005-016	20130729	sativa	sativa	Griboedov-1	40°06.69180'	044°16.21020'	843	L	level	home garden	5-25 plants; 7 plants harvested
MGTK221	104	018-030	20130729	sativa	sativa	Griboedov-2	40°06.74700'	044°16.29000'	846	L	level	home garden	5-25 plants; 3 plants harvested
MGTK222	104	036-049	20130729	georgica	georgica	Geghard-1	40°08.36820'	044°49.07220'	1711	W	hilly/steep	shrubland	5-25 plants; 10 plants in seed
MGTK223	104	063-067	20130729	georgica	georgica	Geghard-2	40°08.43900'	044°49.15080'	1774	W	hilly	margin forest	5-25 plants; a number of plants in seed
MGTK224	104	068-070	20130730	serriola	serriola	Areni	39°43.93500'	045°10.84920'	1039	W	level	roadside	>100 plants,few in seed
MGTK225	104	071-077	20130730	georgica	georgica	Noravank-1	39°43.383'	045°12.320'	1072	W	undulating	roadside - canyon	25-100 plants, but most have no seeds anymore
MGTK226	104	099-105	20130730	georgica	georgica	Noravank-2	39°42.95580'	045°12.37200'	1149	W	hilly	roadside - canyon	5-25 plants; 25 plants with mature seeds
MGTK227	104	106-109	20130730	georgica	georgica	Noravank-3	39°43.443'	045°12.322'	1050	W	hilly	roadside - canyon	5-25 plants; many mature plants
MGTK228	104	111-113	20130730	georgica	georgica	Saralandj	39°42.757'	045°40.039'	1857	W	hilly	roadside	5-25 plants; few plants still with seeds
MGTK229	104	127-129	20130731	georgica	georgica	Goris-1	39°31.40520'	046°19.21980'	1545	W	undulating	roadside	25-100 plants; 25 plants in seed
MGTK230	104	130-134	20130731	georgica	georgica	Goris-2	39°29.05680'	046°21.47280'	1180	W	hilly	roadside	25-100 plants; 25 plants in seed
MGTK231	104	135-137	20130731	serriola	serriola	Goris-3	39°28.31220'	046°21.71280'	1128	W	hilly	roadside	5-100 plants; a number of plants have mature seeds
MGTK232	104	143-154	20130731	georgica	georgica	Tsakqan	39°26.56380'	046°23.61420'	937	W	undulating	roadside	5-25 plants; less than 5 plants harvested
MGTK233A	104	161-188	20130731	georgica	georgica	Tatev-1	39°27.52320'	046°18.53100'	1637	W	undulating	field margin	25-100 plants, many in seed
MGTK233B	104	161-188	20130731	georgica x serriola?	serriola	Tatev-1	39°27.52320'	046°18.53100'	1637	W	undulating	field margin	1-5 plants; 1-2 plants with mature seeds
MGTK234	104	192-196	20130731	georgica	georgica	Tatev-2	39°25.07280'	046°18.05400'	1544	W	level	field margin	>100 populations with many plants in seed
MGTK235	104	197-204	20130731	serriola	serriola	Devil's bridge	39°23.72580'	046°15.44820'	1039	W	hilly	roadside	> 100 plants; around 25 plants in seed
MGTK236	104	205-206	20130731	georgica	georgica	Tatev-3	39°23.52000'	046°15.24420'	1222	W	hilly	roadside	25-100 plants; many plants in seed
MGTK237	104	261-271	20130801	georgica	georgica	Tatev-4	39°27.73980'	046°18.21420'	1647	W	level undulating	roadside	25-100 plants; many plants in seed
MGTK238	104	279-282	20130801	georgica	georgica	Khndzoresk	39°31.09800'	046°25.12380'	1556	W	level	roadside	25-100 plants; around 10 plants in seed collected
MGTK239A	104	284-289	20130801	serriola	serriola	Tegh-1	39°33.12900'	046°28.20480'	1412	W	level	field margin	5-25 plants; less than 10 plants in seed
MGTK239B	104	284-289	20130801	georgica	georgica	Tegh-1	39°33.12900'	046°28.20480'	1412	W	level	field margin	> 100 plants; many plants in seed
MGTK240	104	290-294	20130801	georgica	georgica	Tegh-2	39°33.64620'	046°29.08500'	1340	W	hilly	field margin	25-100 plants; 5-10 plants in seed
MGTK241	104	295-300	20130801	georgica	georgica	Qanahanuj	39°28.46100'	046°21.57120'	1275	W	hilly	roadside	25-100 plants; a number of plants in seed
MGTK242	104	350-352	20130802	georgica	georgica	Sisian-lake-1	39°40.34100'	045°49.22100'	2036	W	undulating	roadside	25-100 plants; around 25 plants in seed
MGTK243	104	353-356	20130802	georgica	georgica	Gorhayk	39°40.67520'	045°45.18480'	2083	W	level	roadside	25-100 plants, few in seed
MGTK244	104	357-360	20130802	georgica	georgica	road Sisian-Yegeghnadzor	39°42.30780'	045°40.51920'	1879	W	hilly	field margin	25-100 plants; mature seed inside flower
MGTK245	104	361-371	20130802	georgica	georgica	Djermuk-1	39°48.93000'	045°40.69200'	1999	W	undulating	field margin	5-100 plants; 5-10 plants with mature seeds in flower

collecting number	photo map	photo nr	date	species name given during expedition	species name given after regeneration	nearest locality name	latitude	longitude	altitude	population type	topography	collecting source	population size
MGTK246	104	384-386	20130802	georgica	georgica	Djermuk-2	39°49.97400'	045°40.34700'	2047	W	level	field margin	25-100 plants; more than 25 plants in seed
MGTK247A	104	396-399/401-402	20130802	georgica	georgica	Djermuk-3	39°50.16720'	045°40.09800'	1992	W	hilly	grass/shrubland - canyon	25-100 plants; many plants in seed
MGTK247B	104	394-395/401-402	20130802	quercina ssp wilhelmsiana	quercina ssp w	Djermuk-3	39°50.16720'	045°40.09800'	1992	W	hilly	grass/shrubland - canyon	5-25 plants; around 5 plants in seed
MGTK248A	104	455-465	20130804	quercina ssp quercina	quercina ssp q	Tsakhadzor-1	40°32.12820'	044°41.99700'	1937	W	hilly-steep	forest- mixed broadleaf oak	5-25 plants; 5 plants mature seeds in flower
MGTK248B	104	455-465	20130804	quercina ssp wilhelmsiana	quercina ssp w	Tsakhadzor-1	40°32.12820'	044°41.99700'	1937	W	hilly-steep	forest- mixed broadleaf oak	5-25 plants; 5 plants mature seeds in flower
MGTK249	104	467-468	20130804	quercina ssp quercina	quercina ssp q	Tsakhadzor-2	40°32.09520'	044°42.07380'	1926	W	undulating-steep	forest- mixed broadleaf oak	5-25 plants; 8 plants in seed
MGTK250	104	482-485	20130805	georgica	georgica	Dilijan	40°41.863'	044°51.029'		W	hilly	field	>100 plants, many in seed
MGTK251	104	528-531	20130805	georgica	georgica	Haghardsin	40°48.12420'	044°53.44680'	1415	W	hilly	field	5-25 plants; around 10 plants in seed collected
MGTK252	104	532-535	20130805	georgica	georgica	Peninsula Lake Sevan	40°33.748'	045°00.710'		W	level	roadside	5-25 plants; 5-10 plants with mature seeds
MGTK253A	103	954-956	20130806	georgica	georgica	Antarut-2	40°24.18300'	044°15.30120'	2301	W	hilly	field	25-100 plants; around 50 plants with mature seed in flower
MGTK253B	104	605-607/612-613	20130806	quercina ssp wilhelmsiana	quercina ssp w	Antarut-2	40°24.18300'	044°15.30120'	2301	W	hilly	field	1-5 plants; 1 plant with seed