Final Evaluation Report

Your Details	
Full Name	Alexey Grachev
Project Title	New sub-population of the Saker falcon in Southern Balqash deserts: features, threats, trend assessment and involvement of students in educational conservation
Application ID	34344-1
Date of this Report	2022-07-25

1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Activity 1: Searching breeding places of Saker falcon distribution between Ile and Karatal Rivers at Southern Balqash deserts. Assessment approx. current number breeding pairs and their distribution on nesting in other birds of prey nests, specialization's character upon forage choice, breeding success for indicated pairs, existing threats possible impact, continuing inhabitation for wintering here. Also, it will be identifying current population trend with comparison previous publications about this species here (Zhatkanbayev, 2014, 2016, 2018). In order to realize it small expeditions and medium/short field trips into				Activity 1: To find breeding localities of saker falcon *Falco cherrug* between Ile and Karatal Rivers at the Southern Balqash deserts within 2021-2022 (14 months), from the start of the project to the summer 2022, field surveys have been carried out in different local areas of the arid region of the southern Balqash valley in the Almaty's administrative region of the Republic of Kazakhstan. This objective was implemented in the small expeditions and medium/short field trips into southern Balqash and it were arranged periodically within project implementation (14 months): in spring (2021; 2022), first half of summer (2021), early autumn (2021) and mid/end of winter (2021/2022) and still to the summer 2022. Especially, field studies were carried out in those natural localities in which, in 2013-2018, the emergence and development of new nesting sub-population of saker falcon was revealed in the deserts of southern Balqash region in south-eastern Kazakhstan territory (Zhatkanbayev, 2014, 2016, 2018ab). In field studies, DJI Mavic 2 Pro drone (bought by this RSG-project budget and it was new and best opportunity to provide field research carefully), Bushnell, Reconyx and Browning camera traps, binoculars, telescopes and GPS devices (from our side Kazakhstan's local NGO "Wildlife Without Borders") were actively used. It turned out that this new breeding sub-population of saker falcon, was in a state of extreme depression during 2021-2022, because of not a single inhabited nest of this species was found during the entire period of research: neither with egg clutch

Southern Balqash area will be arranged periodically within project implementation (14 months): in spring (2021; 2022), first half of summer (2021), early autumn (2021) and mid/end of winter (2021/2022).				nor with chicks. Single adults of this falcon were found only a few times, particularly in the migratory periods, late summer and autumn. Besides it, during the winter period of field studies in the accessible surveyed localities of the southern Balqash deserts, it was revealed that the saker falcon did not stay in this region in the winter of 2021-2022. At the same time in the breeding seasons 2021-2022, several dozen nests of various bird species were examined, including short-toed snake eagle *Circaetus gallicus*, black kite *Milvus migrans* and others. The old and inhabited nests of large eagles were also inspected, including white-tailed sea eagle *Haliaeetus albicilla*, imperial eagle *Aquila heliaca*, long-legged buzzard *Buteo rufinus* and brown-necked raven *Corvus ruficollis*, in the old nest structures of which saker falcon pairs probably can nesting in the deserts of southern Balqash region within breeding seasons 2021-2022. Earlier, in previous years (2013-2018), inhabited saker falcon nests were found here in the old nests of large eagles, long-legged buzzard and brown-necked raven, including nest's buildings were located on power transmission poles. On June 24, 2021, very late nesting falcon with a clutch of five eggs was found on a power line pole in the old nest of the brown-necked raven. This location is situated close (about 100 m) to the two previous inhabited saker falcon nests in the reproductive periods of 2014-2015, and they were also located in the old nests of brown-necked raven, probably the same permanent pair. It was keen hope that the inhabited saker falcon nest finally was found in 2021. However, as it turned out later, this nest with five eggs belonged to another falcon, common kestrel *Falco tinnunculus*. Also in 2022, we did not find residential nests of saker falcon in the observed deserts localities of southern Balqash. One of the main reasons for extremely depression in the breeding sub-population of saker falcon in these two study years was

				the decline in numbers of the falcon's main prey item, great gerbil *Rhombomys opimus*. Occasionally, in 2021, individuals of the great gerbil that we encountered in the field looked very sick. This indirectly indicated that another epizootic of some disease occurred in the local population of this small animal, which were periodically registered in previous decades in this region and led to depression in the population of this rodent species - the main carrier of the plague microbe (bacterium) - *Yersinia pestis*, the causative agent of plague in the southern Balqash natural focus of this dangerous bacterial disease. Great gerbil colonies were in an extremely depressed state in 2021. And most of its colonies we examined in 2021 turned out to be uninhabited. According to questionnaire data received from employees of the anti-plague service operating in the southern Balqash desert region, in the captures of great gerbils, an almost complete absence of young individuals was observed, and among the females caught, they noted resorption of embryos. Apparently, the epizootic disease of the great gerbil continued for several years, presumably starting and developing in 2018-2020. Some revival in the population of the great gerbil began to be observed in the southern Balqash region in the first half of 2022, and this gives hope that the new breeding sub-population of saker falcon will begin to revive again, and pairs of falcons will breed here again. Another reason for the oppressed state of the saker falcon new breeding sub-population in the nesting periods of 2021-2022 could be poaching, which constantly takes place in Kazakhstan, including its southeastern territories. The facts of illegal capture of saker falcons are periodically noted in the mass-media, especially in the late summer and autumn periods. Environmental inspectorates in Kazakhstan are doing their activities to prevent poaching of saker falcons. However, often inspectors detain poachers in the field after

				capturing falcons, including juveniles. Often, falcons are illegally sending abroad are detained at Kazakh, Kyrgyz and Russian airports when they are sending to the countries of the Middle East. As we see now, it is necessary to continue the implementation of various preventive work, including educational activities among the communities of local human population, particularly youth generations. During field research under the project, it was revealed that among the natural enemies, the Asiatic wildcat *Felis lybica ornata* continues to pose a potential threat survival saker falcon, as a nest destroyer of not only saker falcon, but also short-toed snake eagle *Circaetus gallicus*. However, as it turned out during the implementation of this project, individuals of Asiatic wildcat themselves can sometimes die under the wheels of cars on the roads in the southern Balqash region. This fact is evaluated as negative impact of the anthropogenic factor on vertebrate animals living closely to paved roads loaded with car traffic in this arid region. As result of the research carried out under the project over these 2 years, it was confirmed that the Asiatic wildcat, in search of forage and for rest, visit the nests of birds of prey and can eat their nestlings, including short-toed eagle chicks, which was also recorded in 2021-2022. Upon studying the ecology of short-toed snake eagle, such a negative impact from the lifestyle in nature by the Asiatic wildcat we noted for the first time not only in our field research and even among previous such kind of studies by other investigators (see our with co-authors, project participants) very fresh scientific publication in Russian ornithological journal in 2022 (https://cyberleninka.ru/article/n/stepnaya-koshka-felis-lybica-ornata-kak-razoritel-gnyozd-balobana-falco-cherrug-i-zmeeyada-circaetus-gallicus-v-yuzhnom). It should be noted the other existing threat-factor for survive not only birds of prey (involve saker falcon), but also waterfowl

				and near-water bird species as well as mammals are inhabiting in wetlands and closely neighbouring desert biomes in southern Balqash valley there are reeds and bush burning. These fires often most likely arising from deliberate arson during almost all seasons of the year and even spring and summer - breeding seasons of wildlife. Therefore, it is preferable that educational work among the local communities on the balanced and sustainable use of natural resources continue in the future. Also, it is needed to indicate that planning at the start of project the assessment of breeding success for indicative (which will be discovered) pairs could not be evaluated because of breeding pairs with inhabited nests were not finding within project's implementation period upon taking consideration very extremely low numbers of this falcon species in 2021-2022 field research in southern Balqash desert valley. It is need take in consider quite difficult situation of saker falcon foraging base in 2021, in which particularly extremely declined in number of great gerbils – main falcon's foraging item and in the meanwhile this rodent has day activity full year. Therefore, as one results of winter field research it was revealed that this falcon did not wintering in deserts areas of southern Balqash, which were surveyed by us in the winter 2021/2022. However, with expecting revival great gerbil population and this began to be observed in first half of 2022, and this gives hope that saker falcon at least small number could wintering here in winter 2022/2023. Thus, one of achieved results of completed project is assessment of population dynamics of this new breeding saker falcon sub-population in the southern Balqash over these 2 years (2021-2022) of field research upon compared with previous publications about this species here (Zhatkanbayev, 2014, 2016, 2018ab). And the population trend of the breeding sub-

				population of saker falcon in this geographical region is now defined as declining with unstable and extremely low numbers of this species. However, there is now again appeared need to continue monitoring the situation of this saker falcon sub-population here in the very near future. In addition, in 2021, in the field research was revealed, a long-term old residential nest (more than 10 years constantly inhabiting near the local big village Qaraoy in Southern Balqash) of permanent pair of white-tailed sea eagle *Haliaeetus albicilla* (involved as rare birds of prey species into the Red Data Book of the Republic of Kazakhstan, 2010), which, together with the tree on which it was located, collapsed after a dust storm with hurricane gusts that passed 8-9 July 2021. On the project's field research territory with assistance of Kazakhstan's «Ile-Balqash» State Nature Reservation and also support local farmer Baqbaqty Sholpanbekov, and especially important co-funding by the WWF-Russia Central Asian Program, as part of this RSG-project activities, an artificial high huge platform was built to attract this permanent pair of white-tailed sea eagle to the nesting (near the fallen nest) and also additionally it has five nest boxes established on its for attracting to breed the pairs of Saxaul sparrow *Passer ammodendri* – endemic sparrow species to Central Asia region. Thus, in the course of more extensive a lot of work done (especially in the field) than was in the description of objectives and planned at the beginning of project, at the end of 2021 an experimental monitoring artificial site (small area) was created for field observations and to study the further development of situation with possible nesting of permanent pair white-tailed sea eagle and Saxaul sparrows (nesting boxes for them were installed in April 2022). And, which that is very important, with further involvement of schoolchildren from local school "Ulgili" (Qaraoy most remote village in the southern Balqash region) in the

				process of studying and preserving nature. It is, indeed, can be assess as much more important in terms of practical activities for environmental protection and to promote the conservation of threatened vertebrate species.
Activity 2: The lectures will be implemented for local schools' children with distribute leaflets and calendar amongst different settlements as well as small joint excursions with them doing into close surrounding nature for increasing their awareness about alive nature objects, its conservation and sustainable use of natural resources. Educational actions will be based on examples of local wildlife representatives, inclusive Saker falcon and also on sustainable use natural resources. It can lead to increase understanding and significance (at least amongst young generation from school children) for supporting to save wildlife and its habitats. Besides,				Activity 2: As other main part of this project activities environmental lectures and classes in school rooms for local schoolchildren as well as small joint excursions with them into close surrounding nature for increasing their awareness about alive nature objects, its conservation and sustainable use of natural resources were implemented. Also this work about environmental education and sustainable use of local natural resources (mainly for schoolchildren and farmers), including short hikes and excursions into the wild nature of the southern Balqash region was carried out with assistance of the leadership and teachers of Geography and Biology local school "Ulgili" (Qaraoy village, Balqash district, Almaty's administrative region, the Republic of Kazakhstan), the Kazakhstan's "Ile-Balqash" State Nature Reservation and our own Kazakhstan's NGO "Wildlife Without Borders". For example, such educational events were held on May 28, June 17, July 24, 29, October 23, November 19, 2021, June 19-21, 2022. A certain part of this type of activity under our project was carried out with significant support in terms of co-financing from the Central Asian Program of WWF-Russia. As one of project achieved results in the direction of environmental education activities, now, on the initiative of our project's participants, an ecological club of young nature conservationists has been created and started working since June 2022 on a permanent basis at the local school "Ulgili" in the Qaraoy village (most remote in the southern Balqash region from civil centers). It will operate under direct leading of project's participants and in collaboration with biology and geography teachers, as well as with direct common support of Principal and Heads of

it will be implementing actions for increasing awareness level of older school children about responsibilities for wildlife creatures poaching and decreasing it in future. These are main educational priorities of project for wildlife survival through attempts to decrease negative human influence to local wildlife and wilderness focusing onto school children generations. Educational actions will be carrying out parallel with field research works during small expeditions and medium/short field trips into Southern Balqash area, which periodically arranged within of project implementation 14 months. During conduct field trips, it will implement visits into local settlements amongst arid Southern Balqash area (Almaty's				Education from this local school. At present time and very near future till the end of 2022, the work of this ecological club will be financial supported by the Central Asian Program of WWF-Russia. And this is a big achievement of the project's activities on environmental education of schoolchildren and a good opportunity to continue quite possible reduction of mass poaching, which is widespread here among the men of local communities practically in every village of southern Balqash region indeed. Such high level of poaching on local vertebrate wild animals (wild boar, goitered gazelle, Siberian roe deer, Tolay hare, badger, common pheasant, Dalmatian and great white pelicans, swans, ducks and fish) was revealed in the course of anonymous questionnaire surveys during environmental education activities among various groups in local communities during field research in project's territory 2021-2022. Real nature conservation activities are based on the study of local natural objects within the framework of work ecological club of young nature conservationists will promote to increase the importance of environmental priorities and responsibilities in the mentality of representatives of young generations amongst local communities both in the realities of present time and in the medium term and far further. Achieved thus experience in environmental education, first field research events for schoolchildren and, of course, creating such kind of ecological club of young people in the local schools are situated near the State Nature protected areas could be approved more widely in other territories of the Republic of Kazakhstan at least in the "Altyn Emel" State National Natural Park is one of the largest in our country and also located in huge arid area on Almaty's administrative region.

administrative region): in spring (2021, 2022), first half of summer (2021), early autumn (2021) and mid/end of winter (2021/2022).				

2. Describe the three most important outcomes of your project.

a). As one of achieved final result implemented project, it turned out that this new breeding sub-population of saker falcon, was in a state of extreme depression during 2021-2022. One of the main reasons for depression in this falcon sub-population in these two study years was the decline in numbers of the falcon's main prey item, great gerbil *Rhombomys opimus*. Another reason for the oppressed state of saker falcon new breeding sub-population in the reproductive periods of 2021-2022 could be poaching with illegal catching mainly immature individuals for trying goal to send them to abroad for sale in the countries of Middle East. The other existing threat- actor for survival not only birds of prey (including saker falcon), but also waterfowl and near-water bird species as well as mammals which are inhabiting in wetlands and closely to it neighbouring desert biomes in southern Balqash valley there are reeds and bush burnings. Thus, the population trend assessment of this new breeding saker falcon sub-population in the southern Balqash geographic region over these 2 years field research with comparison previous publications about this species here (Zhatkanbayev, 2014, 2016, 2018ab) can be defined as declining with unstable and extremely low numbers this species.

b). Also, it was revealed that among the natural enemies, the Asiatic wildcat *Felis lybica ornata* continues to pose a potential threat survival saker falcon, as a nest destroyer of not only saker falcon, but also short-toed snake eagle *Circaetus gallicus*. It was confirmed that the Asiatic wildcat, in search of forage and for rest, visits the nests of birds of prey and can eat their nestlings, including short-toed eagle chicks, which was also recorded in 2021. Upon studying the ecology of short-toed snake eagle, such a negative impact from the lifestyle in nature by the Asiatic wildcat we noted for the first time and not only in our field research and even among previous such kind of studies by other investigators.

c). In addition, in 2021, in the field research was revealed, a long-term old residential nest (more than 10 years constantly inhabiting near the local big village Qaraoy in Southern Balqash) of permanent pair of white-tailed sea eagle *Haliaeetus albicilla* (involved as rare birds of prey species into the Red Data Book of the Republic of Kazakhstan, 2010), which, together with the tree on which it was located, collapsed after a dust storm with hurricane gusts that passed 8-9 July 2021.

On the project's field research territory with assistance of Kazakhstan's «Ile-Balqash» State Nature Reservation and also support local farmer Baqbaqty Sholpanbekov, and especially important co-funding by the WWF-Russia Central Asian Program, as

part of this RSG-project activities, an artificial high huge platform was built to attract this permanent pair of white-tailed sea eagle to the nesting (near the fallen nest) and also additionally it has five nest boxes established on its for attracting to breed the pairs of Saxaul sparrow *Passer ammodendri* – endemic sparrow species to Central Asia region.

Thus, in the course of more extensive a lot of work done (especially in the field) than was in the description of objectives and planned at the beginning of project, at the end of 2021 an experimental monitoring artificial site (small area) was created for field observations and to study the further development of situation with possible nesting of permanent pair white-tailed sea eagle and Saxaul sparrows (nesting boxes for them were installed in April 2022). And, which that is very important, with further involvement of schoolchildren from local school "Ulgili" (Qaraoy most remote village in the southern Balqash region) in the process of studying and preserving nature. It is, indeed, can be assess as much more important in terms of practical activities for environmental protection and to promote the conservation of threatened vertebrate species.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

Of course, one of unforeseen difficulties for implementation project for much more scale and in-time correctly was a pandemic Covid-19 worldwide situation, which occurred in Kazakhstan territory too, involving project's area in southern Balqash deserts valley. And one project's participant was seriously ill by this infection and be isolated for some time and excluded from project activity to not long time. However, despite this quite difficult situation his role during illness could carried out partially another supporter for project and that it is important it was done timely and project implementation practically was completely fulfilment. Fortunately, during environmental education processes all contact schoolchildren and other represents of local communities did not fall ill. It was occasioned mainly by follow main safety restrictive measures, indeed. In the meanwhile, such kind of extremal difficulties appeared first time in the world currently, and nobody could know how be in this situation and what to do further during following few waves of pandemic with many strains and variants of infection.

4. Describe the involvement of local communities and how they have benefitted from the project.

The work on environmental education and promote for sustainable use of local natural resources (mainly for schoolchildren and farmers), including short hikes and excursions into the wild nature of the southern Balqash region were carried out with assistance of the leadership and teachers of Geography and Biology local school "Ulgili" (Qaraoy village, Balqash district, Almaty's administrative region, the Republic of Kazakhstan), the Kazakhstan's "Ile-Balqash" State Nature Reservation and our own Kazakhstan's NGO "Wildlife Without Borders". All of this type project's activity was directed to increase awareness about alive nature objects, its conservation and sustainable use of local natural resources. And it was implemented with important co-funding support by the Central Asian Program WWF-Russia.

As one of project achieved results in the direction of environmental education activities, now, on the initiative of our project's participants, an ecological club of young nature conservationists has been created and started working since June 2022 on a permanent basis at the local school "Ulgili" in the Qaraoy village (most remote in the southern Balqash region from civil centers). It will operate under direct leading of project's participants and in collaboration with biology and geography teachers, as well as with direct common support of Principal and Heads of Education from this local school. At present time and very near future till the end of 2022, the work of this ecological club will be financial supported by the Central Asian Program of WWF-Russia. And this is a big achievement of the project's activities on environmental education of schoolchildren and a good opportunity to continue quite possible reduction of mass poaching, which is widespread here among the men of local communities practically in every village of southern Balqash region indeed. Such high level of poaching on local vertebrate wild animals (wild boar, goitered gazelle, Siberian roe deer, Tolay hare, badger, common pheasant, Dalmatian and great white pelicans, swans, ducks and fish) was revealed in the course of anonymous questionnaire surveys during environmental education activities among various groups in local communities during field research in project's territory 2021-2022.

5. Are there any plans to continue this work?

Certainly, it is needed to continue monitoring field research for observing situation for state of new breeding sub-population of saker falcon in southern Balqash in 2022-2023, may be accordingly renewing similar project in near future.

To help increasing the importance understanding of environmental priorities and responsibilities in the mentality of representatives of young generations amongst local communities' real environmental activities on a base of the study local wildlife represents within the framework of work ecological club of young nature conservationists need to continue both in the realities of present time and in the medium term and far further.

6. How do you plan to share the results of your work with others?

Unconditionally, achieved thus experience in such field research and building artificial nest platform for large birds of prey species, environmental education, first field research events for schoolchildren and, of course, creating such kind of ecological club for young people in the local schools are situated near the State nature protected areas could be approved more widely in other territories of the Republic of Kazakhstan at least, "Altyn Emel" State National Natural Park is one of the largest in our country and also located in the huge arid area on Almaty's administrative region.

7. Looking ahead, what do you feel are the important next steps?

During the implementation of this project, it turned out that not so little quantity of individuals steppe tortoise *Testudo* (*Agrionemys*) *horsfieldii* (from the end of March to

the first 10 days of June), Tolay hare *Lepus tolai* (all year round) and several species of jerboas (from April to October inclusive), as well as some individuals of Asiatic wildcat *Felis lybica ornata* and different species of snakes, as well as some species of birds of prey (mainly black kite *Milvus migrans* in spring and summer) die under the wheels of cars on the roads of southern Balqash region. These facts are assessed as a negative impact of anthropogenic factor on vertebrate wild animals living in this arid region close to asphalt roads and with rather intense car traffic. Very rarely, such situations lead to traffic accidents. However, unfortunately, most wildlife creatures die, and this does not contribute to their survival, especially steppe tortoise in the habitats of this reptile here. Therefore, we will appeal to the local government authorities to promote the prevention of wildlife death on the asphalt road between Baqanas (the local administrative center in the Almaty's region) and Qaraoy village, to install a special warning traffic sign for the attention of drivers on this road to try to prevent a collision on tortoises (day), hares and jerboas (night).

Also, we have a plan to prepare some new articles, where will be indicated that implemented research was supported by the Rufford Small Grants Programme project and publish them in the near future as soon as possible.

Besides it, it is needed to prepare detailed report about implemented project very soon and begin the preparation of description a new project with similar theme to apply again to the Rufford Small Grants Programme as next small grant.

8. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

Published articles that specifically state that they are the result of research carried out on this project funded by the Rufford Small Grant Program.

1. Zhatkanbayev A.Zh., Dossov N.M., Grachev A.A., Zhatkanbayeva D.M. 2022. Asiatic wildcat *Felis lybica ornata* as a nest destroyer of Saker falcon *Falco cherrug* and Short-toed snake eagle *Circaetus gallicus* in the Southern Balqash // Russian Ornithological Journal 2022. Vol. 31 (2199): 2693-2717 pp. [In Russian] (https://cyberleninka.ru/article/n/stepnaya-koshka-felis-lybica-ornata-kak-razoritel-gnyozd-balobana-falco-cherrug-i-zmeeyada-circaetus-gallicus-v-yuzhnom)

2. Zhatkanbayev A.Zh., Dossov N.M., Grachev A.A. 2021. Late sighting of the Barn Swallow *Hirundo rustica* in the Southern Balqash region in October 2021 // Russian Ornithological Journal 2021. V. 30 (2129): 5026-5029 pp. [In Russian]. (https://cyberleninka.ru/article/n/pozdnyaya-vstrecha-derevenskoy-lastochki-hirundo-rustica-v-yuzhnom-pribalhashie-v-oktyabre-2021-goda/viewer)

3. Zhatkanbayev A.Zh., Dossov N.M., Grachev A.A. 2021. Results of the use of a drone and camera traps in the study of the ecology of the White-tailed Sea eagle *Haliaeetus albicilla* in the Southern Balqash region in the summer of 2021 // Russian Ornithological Journal 2021. V. 30 (2127): 4906-4923 pp. [In Russian].

(https://cyberleninka.ru/article/n/rezultaty-ispolzovaniya-drona-i-fotolovushek-pri-izuchenii-ekologii-orlana-belohvosta-haliaeetus-albicilla-v-yuzhnom-pribalhashie/viewer)

4. Zhatkanbayev A.Zh., Grachev A.A., Dossov N.M. 2021. Unusual nesting of Magpie *Pica*, Saxaul *Passer ammodendri* and Indian *P. indicus* sparrows in the nest of the White-tailed Sea eagle *Haliaeetus albicilla* in the Southern Balqash region in the summer of 2021 // Russian Ornithological Journal 2021. V. 30 (2091): 3224-3233 pp. [In Russian].
(https://cyberleninka.ru/article/n/neobychnoe-gnezdovanie-soroki-pica-pica-saksaulnogo-passer-ammodendri-i-indiyskogo-p-indicus-vorobyov-v-gnezde-orlana-belohvosta/viewer)

Also, at the environmental events about nature conservation education for schoolchildren and other represents of local communities we used special banner (not on a plastic base) with following information and images every time.

Alexey Grachev project: «New sub-population of the Saker falcon in Southern Balqash: features, threats, trend assessment, and involvement of students in educational conservation» by the RUFFORD FOUNDATION, SMALL GRANT 34344-1.

with additional support by WWF Central Asian Program and Public Fund «Wildlife Without Borders», with participation of the «Ile-Balqash» State Nature Reserve and the Institute of Zoology of Science Committee, the Ministry of Education and Science, the Republic of Kazakhstan

9. Provide a full list of all the members of your team and their role in the project.

1. Alexey Grachev, project leader, Master in Biology, member of NGO Public Fund "Wildlife Without Borders", zoologist-investigator. Conducting all types of organizational and analytical management, scientific-practical supervision and all other need work for full implementation of project. Processing and analysis of any

kind of information, collecting need data. Working in co-preparing text, design and conclusion for articles and reports about achieved project results and to prepare other need documents for authorities.

2. Altay Zhatkanbayev, one of the main project participants, Candidate of Biological Sciences, member of NGO Public Fund "Wildlife Without Borders", zoologist-investigator. Promote in carry out all types of organizational and analytical management, attendance in scientific and practical doing full work for project. Collecting data, processing and analysis all received information. Doing lectures, excursions and hikes for schoolchildren. Working in co-preparing text, design and conclusion for articles and reports about project results, and other need documents.

3. Nurlan Dossov, main assistant of project, environmentalist, member of NGO Public Fund "Wildlife Without Borders", investigator. Promotion to conduct all type of work for project implementation completely. Additional special work to carry out project, particularly for taking a picture as cameraman and any other help in the field work. Collecting data and promoting in process and co-analysis of primary information, and in doing lectures, excursions and hikes for schoolchildren. Different technical and analytical support in co-preparing text and design of published articles and to prepare other need documents.

4. Sayagul Nyssambayeva, one of project's assistant for short time, Master in Agricultural Sciences. Common support and promote to project implementation. Help in processing of primary information for analysis. Main promote for preparing lectures and questionnaire surveys for schoolchildren groups in Qazaq language. In addition, some important grammatical help for further oral communications with local school children and other represents of local communities in Qazaq language.

5. Sergey Bespalov, one of project's assistant for short time, Bachelor student for Sciences of Earth, member of NGO Public Fund "Wildlife Without Borders". Technical promote to project implementation in different sides, particularly in all technician work before start carrying out a new appeared objectives such as preparing to build an artificial nest platform for birds of prey.

6. Baqbaqty Sholpanbekov, farmer from local communities, consultant with high aware for local landscape and biodiversity, particularly on one important part of project's field territory. Implementation of role project's local adviser with big knowledge about last historical situations for natural localities. Additionally, contribution as quite technical promote for project implementation in the field, including for preparing to build an artificial nest platform for birds of prey.

7. Saltore Saparbayev, temporary additional assistant of project, Master of Agricultural Sciences, hunting game facilities specialist, wildlife photographer, member of NGO Public Fund "Wildlife Without Borders", wildlife investigator. Short time project's assistant at the February 2022 for field searching and observing of wild animal on the territory of project.

10. Any other comments?

It should be noted that there were also technical difficulties in different periods of the project implementation. So, for example, when performing relatively long over flights on the DJI Mavic 2 Pro drone in very hot and rather cold season, the signal from the quadrocopter disappeared and manual control was lost. It was only because the smart controller was set in GPS mode that it was able to return to its starting point several times with a residual low battery charge. On another occasion, on June 20, 2022, while examine inhabiting nest of black kite *Milvus migrans* with feathering chicks on turanga tree *Populus diversifolia* in the project's field area in the southern Balqash region, a collision occurred with the leaves and thin branches of the tree, and the drone caught in the branches at height of 12- 13 meters. Due to fact that in addition to project participants, schoolchildren from the local "Ulgili" school also participated in the field trip, the stuck quadrocopter was shaken off tree branches and it fell onto surface of large tarpaulin stretched from four corners. It was very lucky that the consequences of such "crash test" were not fatal and the drone continued to remain in working condition. Apparently, for such cases, which may occur unexpectedly, especially in the field, it is necessary to further provide for depreciation costs or funds for the current repair of such quite expensive equipment. However, similar expenses in a certain amount, apparently, should be provided for other significant technical equipment, including the expedition vehicle.

Also, in the budget of future projects, it is desirable to include the purchase of additional batteries for the drone, as this is very important when working with it quickly in the field, when one or two more such batteries are often missing right at the site of the ongoing survey. Again, any purchased and quite expensive equipment will not be able to serve for maximum longest time, although it must strive to ensure that it lasts as long as possible. Especially considering that the use of quadrocopter for field research provides significant advantages and previously unimaginable possibilities at the modern technical level, especially when examining small and not far from observer-researcher localities, as well as very hard-to-reach bird nests, particularly located on power transmission poles.

Also, on behalf of all project participants, it would like to express our gratitude to the NGO – Public Fund "Wildlife Without Borders" and its executive director (Dina Konysbayeva) for the ongoing accounts and operational management in the implementation of various current activities and doing needs payments for this project.