Large Carnivore Initiative for Europe (LCIE) – Assessment of the Brown Bear Project in Trentino (Italy)

21 May 2018

The Large Carnivore Initiative for Europe (LCIE) is a Specialist Group of the Species Survival Commission (SSC) of the International Union for the Conservation of Nature (IUCN). It is composed by 40 members whose competence covers all large carnivores all over Europe. The LCIE held its annual meeting in Trento during March 20-23, 2018, where a specific session was dedicated to the presentation and discussion of the Brown Bear project in Trentino. This document is a summary of the LCIE assessment of the project: it offers the LCIE recommendations to improve the management of the programme and it has been prepared at the request of the Province of Trento administration.

The brown bear reintroduction in Trentino (Italian central Alps) has been a well organized and documented project which has successfully achieved its initial goals. It has become an important reference in large carnivore conservation in Europe and will hopefully continue successfully towards the establishment of a viable bear population. Currently, the Trentino brown bear project has important challenges that need to be efficiently and successfully addressed. Other population reinforcements, such as the one in the Pyrenees, share a common history and similar challenges. In this sense, the regular exchange of experiences with other teams in the management and conservation of brown bears, particularly of reintroduced and small populations, would be very positive.

Population monitoring

The monitoring program of the Trentino brown bear population is robust, well-designed and of high quality. It has provided valuable insights into population trends, genetic variability and population structure, which is important for scientific, conservation and managerial reasons. Monitoring of heterozygosity is essential and has provided valuable data related to the population genetic variability. The current methodology is appropriate and includes sampling cells in a 4x4 km grid every 2 weeks (each cell has a hair trap). The monitoring should be maintained in the same high standards because of the reintroduced status of the population, its small size and vulnerability, and the possibility that it expands into adjacent areas/countries. In general, the monitoring methods should be kept consistent, so results are comparable.

It is important that the area of bear distribution is monitored every year in order to keep track of the expected expansion. A high quality monitoring program, like the program in Trentino, is quite demanding in terms of funding and people. In case of limited funds, the parts of the current monitoring program related to parameters estimated with molecular tools (e.g. population size based on capture-marked-recapture methods of genotyped individuals, population sex ratio or heterozygosity) may be conducted less frequently (every 3-5 years). The genetic part of the monitoring program can also be less intensive, i.e. at

longer time intervals and/or restricted to the core area (female breeding range), once the bear population will reach larger size. In future, it may be worthy consider refining genetic methods which are more informative and cheaper, like developing SNPs for the regional population.

Systematic observations of females with cubs-of-the-year are an easy and affordable way to monitor reproduction and to identify reproductive areas. Telemetry is highly recommended, as it will provide high quality information on the spatial behavior, expansion areas, habitat requirements and dispersal corridors and barriers. Trentino managers may consider reviewing the current brown bear capture and immobilization protocols. The monitoring of human-bear conflicts and of bear mortalities should be kept on a permanent basis.

Genetic variability

Population viability should be the final goal of the project. Both population size and genetic variability data could suggest that, in the long term, the population may not be viable. As a first and crucial step, we recommend to develop and approve an Action Plan which includes an assessment study of the inbreeding levels under different scenarios of human-caused mortality, immigration from the Dinaric-Pindos, and population augmentation. The study may use available information from previous and ongoing research, e.g. the population viability analysis for Trentino bears by Marta de Barba. A genetic model of the brown bear population in the Pyrenees, simulating not only population dynamics but also inbreeding and allelic diversity, is being developed by Guillaume Chapron and Pierre-Yves Quenette. Discussions on this topic could be jointly shared with the team from Pyrenees (where one male monopolized all reproductions, the genetic variability decreased since 2006, and restocking has been recently conducted).

Trentino managers should keep in mind that bringing new contributions to the genetic pool may be needed. If restocking would be recommended by the Action Plan, it would be better to do it sooner. In a growing population, like Trentino's, newly introduced bears would have a smaller effect on genetic variability, i.e., the effect of a new bear is larger at smaller population sizes. The Action Plan should consider enhancing landscape connectivity with the Dinaric population, as a complementary strategy to population augmentation.

Restocking can be controversial and Trentino managers will have to inform and convince the public that restocking is needed. Released bears cannot be linked to an increase in the number of damages or attacks. Managers should put a special effort in conflict mitigation, particularly in measures directly aimed at damage prevention; this may help to keep public support. Problem bears that are removed (e.g. after serious conflicts with people) can be replaced by new bears from the Dinaric population. This way, the impact of removing a bear on population viability is lower and the social impact of both actions on interest groups (animal welfare groups, local communities) can be lessened, also because these interventions may then be perceived as a routine procedure, instead of exceptional. The Action Plan should be elaborated as soon as possible, and consider all the issues raised in this document.

To be viable in the long term, the Trentino bear population should be allowed to expand. Barriers should be identified and landscape connectivity improved (see below). An

important challenge is to make sure that Slovenia and Austria (and also Switzerland) would accept bears in their Alpine part and that they are ready for the population expansion, before bears appear. The establishment of a population-level coordination forum or transboundary management expert group from those countries could facilitate these tasks.

Problem bears

The Province of Trento has already done a remarkable work on these issues and has established clear protocols of action for the cases of problem bears in the Action Plan for the Interregional Conservation of Brown Bear in the Central Eastern Alps (PACOBACE). This document is in line with documents about the management of problem bears in other populations: (1) Majić Skrbinšek and Krofel (2014), Defining, preventing, and reacting to problem bear behaviour in Europe, prepared for DG Environment, European Commission; (2) Černe (2015) Guidelines for bear intervention groups, LIFE DINALP BEAR; (3) protocols developed by the French and Spanish team in Pyrenees ("Ours à problème", "Ours en difficulté"). Trentino managers have closely followed the established protocols in all cases of brown bear interventions.

The general recommendation for the management of problem bears is to prevent-document-quickly react -inform the public, which has been consistently applied by Trentino managers. Important work has been done and should be continued to improve human-bear coexistence, e.g. informing people how to behave during an encounter, supporting the effective protection of beehives and livestock, avoiding bear feeding, removing artificial food that can attract bears, etc. A special effort should be made to promote the use of preventive measures to avoid damages by bears. Not all beekeepers seem to use electric fences, and half of the electric fences distributed by the administration are not properly maintained. Compensation for damages should exist, but managers should consider progressively making the payments conditional to the use of preventive measures. Aversive conditioning with dogs has been professionally worked out by the Trentino bear emergency team and seems to work efficiently. However, all these aversive conditioning attempts should be documented and evaluated in order to learn from these experiences. They are extremely valuable for Trentino, as well as for other bear areas which are highly humanized.

In the cases of bear attacks to humans, Trentino managers should continue applying the established protocols consistently, as it has been done. A complete documentation on the cases of bear attacks to humans is needed to fully understand aggressive behavior in bears and to evaluate the situations which trigger those accidents (e.g. walking with unleashed dogs, more attacks in a specific period, etc). This is the only possible way to prevent attacks, together with the dissemination of information to the public on a permanent basis on how to avoid encounters, and how to behave when encountering a bear and in case of an attack. Decisions about removing a bear or not should be transparent and well explained. As it is impossible to fulfill the expectations of all stakeholders, consider creating an expert committee (formed by representatives of various stakeholders) to consult such decisions. This will help to gain public support and will minimize controversy.

It may be expected that the number of conflicts will increase, particularly when the population will grow and expand into less suitable habitat closer to humans. Problem bears can decrease public support towards population restoration. For a long-term public support,

people need to feel safe and, thus, public safety is a priority. For those reasons, prevention and communication are extremely important. Certain level of human-bear conflicts is unavoidable and this has to be properly communicated along with a clear description of the policies adopted and the protocols approved. To educate the public to protect the bears while opening the possibility to lethal control demands a well designed communication program to keep this difficult balance. Removing problem bears (an action that has an impact on the population) should be less controversial for the public opinion if linked to the release of new animals from the Dinaric population. Keeping problem bears in captivity is both poor welfare and non-sustainable; this has to be properly explained to the public. A growing understanding that failure to adopt mitigation may lead to a dead bear can well increase pressure to mitigate conflicts.

Geographical isolation

Landscape connectivity is a critical issue to be urgently addressed; it is important not only for bears, but for biodiversity in general. Anthropogenic linear barriers mainly related to transportation infrastructure are an important cause of geographic isolation, especially when those barriers interfere with natural dispersal corridors. A detailed study on connectivity to identify barriers, dispersal corridors and suitable habitat, as well as the elaboration and deployment of a mitigation strategy, are highly recommended. Such study (covering the entire geographic area from Trentino to Slovenia) should reveal where connectivity still exists and should be guaranteed, where it can be improved and which defragmentation actions are needed. It should be part of the Action Plan proposed above and carried out in collaboration with other regional and provincial administrations. It will provide important information for regional urban planning and future infrastructure developments.

Telemetry has shown that some male bears have crossed the Brenner highway and that there are movements of bears with Slovenia and Austria. The experience from the reconnection of the Cantabrian subpopulations in spite of the 4-lane fenced highway is inspiring. Especially when it comes to roads, railways and highways, green bridges and wildlife passages designed for brown bears, may facilitate animal crossing. The administration should put more attention on the Adige valley, which is an important barrier. The role of some of its tributaries (e.g. Avisio river) in maintaining landscape connectivity should be evaluated. The conservation and restoration of natural corridors in the region and the development of a defragmentation program to mitigate infrastructure barriers and improve connectivity is a must for the future of the Trentino population. On the other hand, such mitigation measures may help to reduce bear mortality from car collisions, which represents almost half of the human-caused mortality. Avoiding road casualties, and decreasing human-caused mortality in general, is a management intervention highly recommended to improve the viability of the population. Defragmentation and mitigation measures may be quite expensive and they should be properly planned, together with the required funds. The connectivity study recommended here may obtain useful information from the ongoing projects LIFE DINALP BEAR and BearConnect on functional connectivity of brown bear populations in Europe (Biodiversa call).

It will be important to involve all countries and regions in the landscape connectivity planning for the Alpine region. A joint work on dispersal corridors with Slovenia and Austria is essential, as well as on public acceptance of bears in the Alpine part of these countries. Removing fences, particularly in the borders (e.g. between Croatia and Slovenia) is highly

desirable. To foster connectivity with the Dinaric population, the connectivity study should evaluate the possibility of establishing a stepping stone or small population in between (e.g. west of lake Cadore).

Long-term management prospects

First and most important, the Italian Ministry of Environment and the Trento administration should convene a high-level meeting of the agencies of nature conservation of the neighbouring regions and states, and pose the question how desirable is the goal of an Alpine bear population. The political framework cannot be left undefined. Without political willingness, the technical questions on the prospects of a viable population are secondary. Achieving the ultimate goal of a viable population is a long-term process that needs political coordination.

In this case, a viable brown bear population is possible only if it is shared by several countries. Once the political support at both national and international levels is guaranteed, maintaining the functional connectivity and strengthening the population is crucial. Restocking in the Trentino population to improve genetic variability will help, but in the long term, the goal should be a medium-sized or large Alpine population with several reproductive nuclei of bears (probably in different countries) connected to each other and to the Dinaric-Pindos population through Slovenia. A pan-Alpine action plan or strategy (maybe under the umbrella of the Alpine Convention), involving and coordinating all Alpine countries from the very beginning is recommended. Since bears have already dispersed into Austria, Switzerland or Germany, there should be an interest in developing such a plan and somehow “guide” the expansion of the bear population. Transboundary cooperation (and the sometimes forgotten transregional cooperation in every country) is crucial.

In the long-term, a very important task is the routine, everyday work to avoid poaching and killing for retaliation, to preserve bear habitat, to reduce conflicts and to educate the public, among others. This permanent and important work has been conducted in Trentino region for many years. Hard data yielded from a high quality monitoring will help support management decisions in the long-term and anticipate arising issues. Keeping working on public acceptance is a priority. In this sense, working more closely with journalists, educating and informing them (e.g. training sessions), and avoiding “bad press” is important for not to lose the opinion battle. On the other hand, bears in Trentino could be made more accessible to the public, and ecotourism based on bears could also be promoted. People whose livelihoods are significantly improved because of bear presence may be an important player. Developing a social and economic strategy to increase public support is essential to maintain a viable population in the long-term.

The management of the brown bear in Trentino has been a big challenge and a conservation success. Starting from a population on the verge of extinction in the end of the XX century, the current management issues under discussion are far behind the initial problems. The Trentino team has achieved the established goals following a rigorous plan, based on previous assessments, scientific data, high quality monitoring, proper protocols and continuous efforts to decrease human-bear conflicts. The good work being done in Trentino is developing the best-practice tools and approaches, and has become a reference project. It is important that the new challenges are faced with the same rigour and professionalism.