Community-based trophy hunting of Bighorn Sheep in Mexico

Introduction: Species, Use and Trade

Bighorn Sheep *(*also known as American/mountain/desert sheep, Borrego cimarrón) is a wide-ranging species, inhabiting arid and semi-arid areas with steep mountains and cliffs across western Canada, the western United States, and northern Mexico. The introduction of livestock and uncontrolled hunting during the colonisation era led to rapid decline of Bighorn Sheep, with populations plummeting from roughly 1 million individuals in 1800 to fewer than 25,000 in 1950. In Mexico, the Northeast populations were extirpated, and the populations in the Northwest and Baja Peninsula were fragmented.

Today, however, Bighorn Sheep populations have more than tripled from their historic lows to roughly 60,000-80,000 globally. Only the Mexico population is included in CITES App II (the USA and Canada populations are not listed). It is assessed as Least Concern in the IUCN Red List, and it is listed in the Special Protection category in the Mexican list of species at risk.

Trade in Bighorn Sheep specimens is primarily of hunting trophies. Trophy hunting of Bighorn Sheep takes place widely across North America. Re-establishment of populations across their former range has been a priority for range states, and much of this has been incentivised through trophy hunting. In Mexico trophy hunting has been a key approach to incentivise such reintroductions onto privately owned and communally held land (*ejidos*). Mexico exports around 100-200 trophies per year, mainly to the USA (see Fig 1).

The first hunt in Mexico was authorised in 1969, but all hunting was suspended in 1993, just after Mexico joined CITES, as there was insufficient data to establish reliable population numbers. After surveys, hunting was re-opened in 1995 in the states of Baja California Sur and Sonora. A ban remains in place in Baja California.

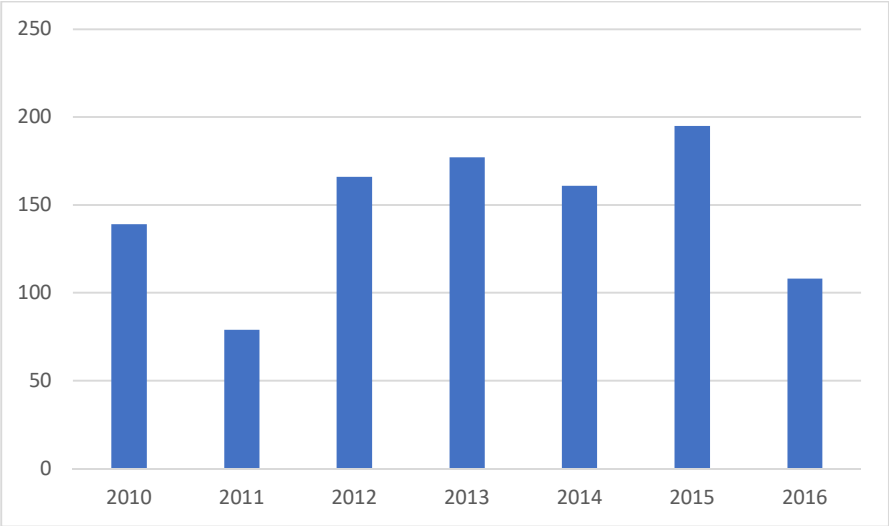

Fig 1. Reported exports of hunting trophies from the wild from Mexico 2010-2016. Data from CITES trade database (exporter-reported figures for type=trophies or horns; purpose code = H or P or T; source code W).

In the Mexican system, hunting is only permitted within Conservation Wildlife Management Units (UMAs). UMAs must have a resource management plan and a technician to monitor wildlife resources. Half of these UMAs – a large majority of Bighorn Sheep protected habitat – is managed by local communal farmers (*ejiditarios*). In addition, one UMA, on Tiburon Island in the Sea of Cortez off the coast of the state of Sonora, is owned and managed by indigenous Seri Indians (or Comcaác). In 1975, 20 sheep were reintroduced after long extinction to Tiburon Island, and by 2012, there were more than 650 individuals. Many more individuals from this population have been used to repopulate mountains in Sonora mainland, as well to establish captive breeding programmes in the states of Sonora, Chihuahua and Coahuila.

Community and indigenous UMAs oversee and directly participate in hunting expeditions on their land, and have the right to keep the associated revenues. They also develop and coordinate conservation and management actions, organise anti-poaching activities, carry out surveys and other wildlife management activities, and coordinate with other UMAs.

Livelihood Benefits

Trophy hunting provides important economic and other benefits to community and indigenous wildlife management groups.

Sale of the opportunity to hunt raises important revenues for community UMAs. Communities gain USD 10,000-40,000 per hunt (taking purchasing power parity into account[1], equating to Int$ 90,400-361,600), which is a very significant amount in rural regions where there is a high level of poverty. Members of *ejidos* that are not directly involved with the UMA activities also benefit from the bighorn hunting, through sharing of profits with other community members.

The Seri Indians on Tiburon Island currently sell 10-15 hunts per year, and 8-12 more on Seri lands in mainland Sonora, with recent permits selling for USD 80,000 to 90,000 each (Int$ 723,300-813,600). They often receive six figure bids for hunting opportunities, and have gained up to USD 150,000 for a

[1] Using the purchasing power parity conversion factor for Mexico in 2017 of 9.04 (https://data.worldbank.org/indicator/PA.NUS.PPP?view=map).

single hunt**.** The Seri retain around 85% of the gains from each trophy; the rest represents the commission of the Mexican hunting broker who sells the trophy in the foreign (mainly USA) hunting conventions, and arranges all the logistics for the hunter's trip (travel, transportation, food, gun, taxidermy, hosting, camping, and CITES permits). This arrangement is different from that operating in Baja California Sur, where *ejidos* need an American and Mexican broker, and retain around 50 to 80% of the total value of the hunt. In past years, the Wild Sheep Foundation (USA) auctioned Bighorn Sheep hunting permits for the Seri Indians. Between 1998 and 2007, these auctions raised USD 3.2 million, which was held in a trust and allocated by a committee with a broad range of government and community stakeholder representatives to conservation and rural development projects. An additional benefit of the growth in bighorn populations stimulated by hunting opportunities over this period was another USD 1.2 million earned from the sale of young animals for translocation to other parts of their former range, at USD 3,000 per sheep.

Today, funds from sale of hunting permits are returned to the community to fund conservation and habitat management activities of their UMA, as well as funding community investments such as scholarships, a natural disasters fund, infrastructure (public lights, water supply and sanitation, paying local police, building ecotourism infrastructure, providing tools for fishing and forestry activities) and managing land tenure.

In addition to the income streams from sale of hunts, the trophy hunting and its management creates permanent and temporary jobs for community members, such as "eco-guardians" to deter poaching, and guides, outfitters, cooks, cleaners, and wranglers for hunting trips.

Before these conservation programmes based on trophy hunting were initiated, both *ejiditarios* in mainland range areas and the Seri Indians faced acute poverty, depending mainly on large herds of domestic goats and traditional fisheries exploitation for subsistence and income. The hunting programmes have been very successful in supporting livelihoods of *ejiditarios* and the Seri indigenous people, as well as fostering community capacity and pride in undertaking wildlife management.

Conservation Impacts

The Mexican population of Bighorn Sheep has grown steadily since the beginning of the trophy hunting programme (see Fig 3).

On Tiburon Island the sheep population has grown steadily since the initial reintroduction of 20 animals, and today numbers approximately 477, thought to be close to the island's carrying capacity. The island has also been an important source population for the re-establishment of Bighorn Sheep populations in Sonora and elsewhere within the mainland range, with over 500 animals translocated to the mainland. The wild population in Sonora has grown by 40% from 2006 to 2016, with an additional 2,500 sheep in captive breeding facilities. Reintroductions to Northeast Mexico have also taken place. In other States where hunting management takes place, the populations are growing: in Chihuahua, the species disappeared in the decade of 1970, but by 2017, there were more than 600 individuals in seven UMAs (comprising more than 2,000 ha [20 km^2] each); Coahuila state has successfully released a population of around 50-100 individuals, but there are no available figures of the total population size; and Baja California Sur maintains a relatively small but stable population of 300-400 individuals (since 2002), for which the main threat is transmission of livestock diseases. Particularly in Baja California Sur, nine UMAs conserve Bighorn sheep habitat (close to 1,100,000 ha (11,000 km^2) of its range).

Hunting is carefully managed to avoid negative impacts. Only males older than 6 years can be hunted, and regional quotas are established (10-20% of adult males) for regions defined by bighorns' seasonal movements. Activities at regional level to improve habitat connectivity and habitat quality are also undertaken.

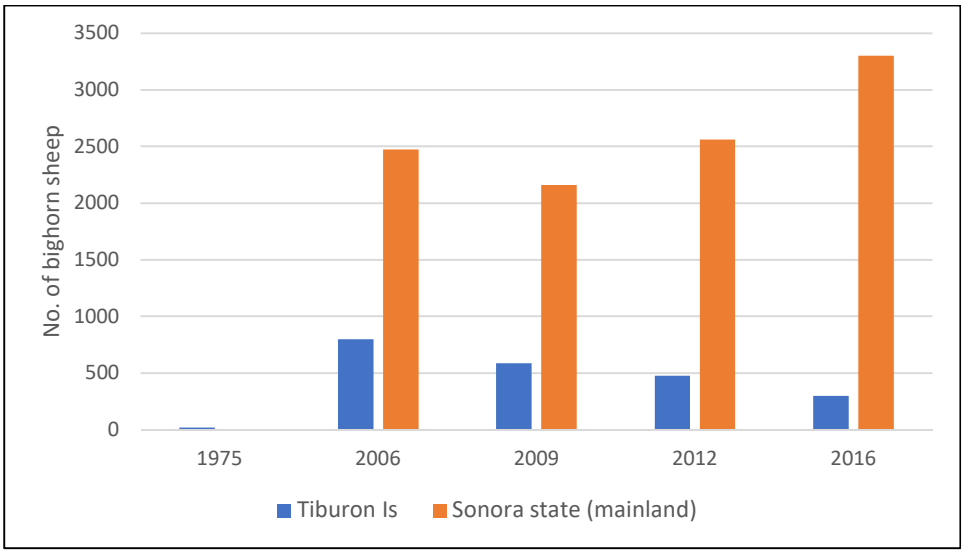

Fig 3. Increases in wild Bighorn Sheep populations on the state of Sonora (specifically in mainland Sonora) under a sustainable trophy hunting programme. Trophy hunting was re-established in Mexico in 1995. The decrease in the Tiburon Island population is due to the large number of animals translocated from this population to the mainland, to re-establish extirpated population and to maintain the island population at or below carrying capacity.

These recoveries of Bighorn Sheep populations have been driven by the benefits that local landowners and communities can gain from re-establishing wildlife habitat and wildlife populations on their land, via trophy hunting. These benefits have provided incentives for landowners to restore habitat and reintroduce or restore bighorn populations to provide a source of income. Before these hunting programmes were initiated, in general local *ejidos* and Seri communities did not value, manage or protect wild sheep, and depended largely on goats, which were damaging to habitat and competed with bighorn populations. Bighorns require large areas of high quality habitat, so the conservation benefits include large scale habitat restoration and improving connectivity. Many private and communal landowners have eliminated or reduced livestock to focus on wildlife because of the substantial revenues that can be generated from trophy hunting.

In addition, local State governments play a major role in the management of wild Bighorn Sheep. For example, in Sonora, the State government finances the aerial surveys that enable the establishment of sustainable regional annual trophy quotas, promote releases of captive bred specimens to the wild through a reward programme (assigning one additional trophy to UMAs for every three or four releases), and improve the marking and traceability of legal trophies.

This experience in Mexico reinforces experience elsewhere in North America, in Canada and the USA, where trophy hunting programmes have contributed to the re-establishment and recovery of bighorn populations.

Lessons for CITES Implementation: Challenges, Successes and Failures

Well-managed trophy hunting and trade in this case provides powerful incentives for recovery of wild species, including CITES-listed species, and restoration and conservation of their habitats, while also providing a wide range of benefits for indigenous peoples and local communities. In Mexico, sustainable use through trophy hunting of Bighorn Sheep has driven the restoration and recovery of bighorn populations, reducing uncontrolled hunting, and incentivizing reintroduction of bighorns to

large areas. CITES should recognise and enhance the conservation and livelihood benefits of well-managed trophy hunting.

Challenges faced by the programme include:

- combating ongoing poaching,
- reducing diseases transmitted by feral species and conventional livestock production systems,
- establishing large areas free of human disturbance, and
- addressing social problems, including addressing land tenure, better sharing of benefits, strengthening value chains to increase local benefits, strengthening the capacity of communities to manage wildlife and participate in the value chain, and involving women and youth in wildlife management via participation in the UMAs.

Key References

Festa-Bianchet, M (2008) *Ovis canadensis*. *The IUCN Red List of Threatened Species* 2008: e.T15735A5075259. http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T15735A5075259.en. [16 April 2019].

Hurley K, Brewer C & Thornton GN (2015) The role of hunters in conservation, restoration, and management of North American wild sheep. *International Journal of Environmental Studies* 72(5): 784-796.

Lee R (2008) Hunting as a tool for conservation: the case of sheep hunting in Mexico. *In: Best practices in sustainable hunting: A guide to best practices from around the world.* CIC Technical Series Publication No.1**,** CIC – International Council for Game and Wildlife Conservation, Budapest, and United Nations Food and Agriculture Organisation, Rome. Pp 53-58.

Gobierno del Estado de Sonora (2012). *Borrego Cimarrón (Ovis canadensis mexicana): Resultados del monitoreo aéreo en el Estado de Sonora, México*. Noviembre, 2012. Dirección General Forestal y Fauna de Interés Cinegético de la SAGARHPA.

Valdés A, M y Segundo G JM (2007) Estrategias para la conservación en México para el borrego cimarrón *(Ovis canadensis*) y el berrendo (*Antilocapra americana*). *In*: Sánchez O, Zamorano P, Peters E & Moya H (2007) *Temas sobre conservación de vertebrados silvestres en México*. Secretaría de Medio Ambiente y Recursos Naturales. Mexico City, México.

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