The Beekeepers Quarterly

No 119 incorporating BeeBiz March 2015

The BIBBA-SICAMM Conference, Llangollen 2014

Monthly Tasks in the Apiaries of Danish Beekeeper Anders-Peter Blæsild, translated by *Anthony Lee.*

The Wintering Hives of Valerij Palamarchuk and their Use for the Rearing of Bees, *Alexander Komissar*

BEE BREEDING

honey crop is disappointing then it is always to do with the weather or the beekeeper and never the bees (56* north).

I believe that the original black bee can still be found in the British Isles but I must conclude that our bees and those that live best in the cooler areas of this country are bees that look and behave like black bees but have come from a varied background as a result of the great numbers of imports over the last 100 years. Honey bees can very quickly adapt to a region and a climate and a beekeeper over a period of 15m – 20 years. They can also, if left alone, work towards a state of total natural immunity over a similar period. They have the diseases but they don't suffer from them. I suspect that they can also change their colour to nearer black to absorb more heat from a weaker sun but I don't know this. They are by definition very closely bred but rarely inbred.

Immunity is lost (a) if bees are line bred for too long, (b) if bees are malnourished (too many in a site) or persistently abused, and (c) if as so often happens in this country, imported queens are repeatedly outcrossed with totally unrelated drones. Years ago these problems were partially overcome by the use of antibiotics. The prophylactic use of antibiotics caused the bees to become more susceptible and it also got in the honey. This was a worldwide problem but not so bad now. My best advice is to look well after the bees that you already have or otherwise buy queens from breeders who know exactly what they are doing and from the same latitude.

BURZYAN WILD-HIVE HONEYBEE *A. m. mellifera* IN SOUTH URAL

Rustem A. Ilyasov(1), Michail N. Kosarev(2), Alla Neal(3), Fitrat G. Yumaguzhin(4)

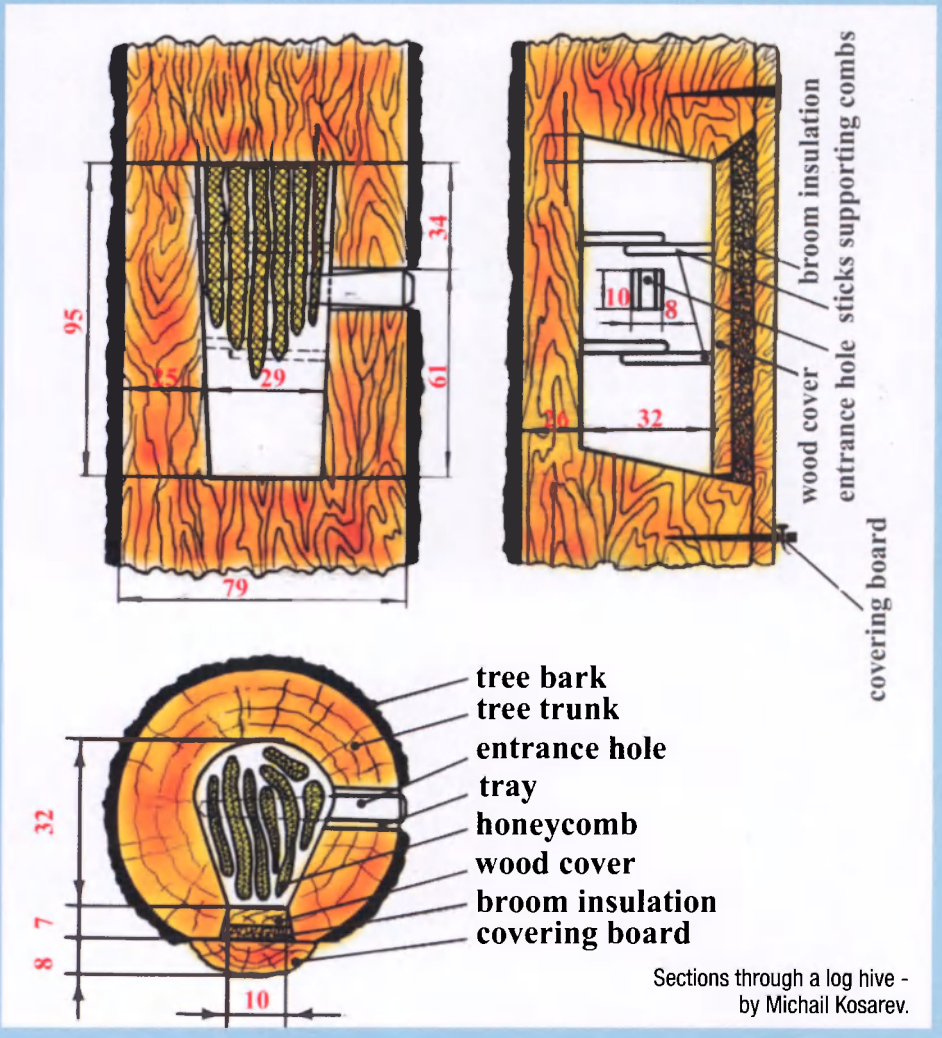
1. Ufa Scientific Centre of the Russian Academy of Science, Institute of biochemistry and genetics, 450054, Russia, Ufa, prospect Oktyabrya, 71. E-mail: apismell@hotmail.com
2. State Nature Reserve «Shulgan-Tash», Russia, Bashkortostan republic, Irgizly, Zapovednaya 4, E-mail: mnkos@mail.ru
3. Great Britain beekeeper, United Kingdom, Woking, E-mail: Alla.Neal@allaccounting.co.uk
4. Zauralski branch of bashkir State Agrarian University, Russia, Bashkortostan republic, Sibai, Pushkina 4, E-mail: fitrat63@mail.ru

Key words: ***Apis mellifera mellifera*, European dark bee, Burzyan, Beekeeping, tree hollow apiculture, «Koloda», natural tree hollow, isolation of wild bees A. m. mellifera, spontaneous hybridisation.**

Summary

A spontaneous hybridization among honeybees in most European countries has led to the loss in the gene pool of the dark European honeybee. We believe Russia still has a considerable array of pure bred populations of European dark bees A. m. mellifera. The commonest bee, the Burzyan Honeybee, lives under protection in the mountain forest zone of South Ural in the State Nature Biosphere Reserve 'Shulgan-Tash', regional nature reserve 'Altyn Solok' and National Park «Bashkortostan». These Wild Tree Hollow Honeybees are of great interest among beekeepers and scientists around the world, as they could be used to make a reconstruction of the natural history of bees.

The European dark bee *Apis mellifera mellifera* - a unique subspecies of honeybee *Apis mellifera*, is evolutionarily adapted to live in the continental climate of northern Eurasia with long cold winters. In modern days this subspecies survived only in a few isolated reservation areas. The biggest areas are in Russia: about 300,000 colonies avoided spontaneous hybridisation in the South Ural area of Republic of Bashkirostan; about 200,000 colonies in the Middle Ural area [Shurakov et al., 1999; Ilyasov et al., 2006] and about 250,000 colonies in Volga region of Republic of Tatarstan [Krivtsov, Grankin, 2004]. We also have information



Sections through a log hive - by Michail Kosarev.

BEE BREEDING

Apiary in the State Nature Biosphere Reserve 'Shulgan-Tash' with artificial nests in tree trunk hollows on ground.

Apiary in 'Shulgan-Tash' with wild bees in hives.!

Burzyan Wild-hive Honeybee *A. m. mellifera*

Their natural environment - the river "Belaya" translated as "White".

about large populations of European dark bee in the Altai region of the Republic of Udmurtia. About 99% of European dark bees in the South Ural are kept in frame hives in apiaries and about 1% - in natural and especially made for them tree hollows. The evolution of European dark bees was synchronous with the evolution of the widely spreading linden tree, *Tilia cordata*, and therefore the main forage crop for these bees is when these trees blossom [Kosarev et al., 2011].

Scientists of the Biochemical Insects Adaptation Laboratory in Ufa Scientific Centre of the Russian Academy of Science have been monitoring the gene pool of the Burzyan honeybees for the last 20 years using polymorphism of loci COI-COII of mtDNA and microsatellite loci ap243 and 4a110 of nuclear DNA. This extensive research confirmed the pureness of the gene pool and that this gene pool is a subspecies of *A. m. mellifera* [Sattarov, 2000; Nikolenko, Poskryakov, 2002; Ilyasov et al., 2007b].

In 2011, upon the request by the Institute of Beekeeping and State Reserve 'Shulgan-Tash', bees from this population were classified as a separate breed type 'Burzyan wild-hive bee'. This breed was registered patent No. 5956 from 14.06.2011 by the State Commission of the Russian Federation in the state register.

According to artefacts found at the burial site near Birsk of Bahmutin culture, beekeeping in the southern Ural started no later than 5 - 6 centuries BC among local Finno-Ugric tribes. Later beekeeping was adopted by Bashkir ancestors, who assimilated and drove away the Bahmutin people [Kosarev et al., 2011].

The beekeeping could occur without tools of iron of course and the skills accumulated were passed on by many generations of Tree Hollow Beekeepers [Kosarev et al., 1999].

Bashkir beekeeping flourished in the 18th century. It took it longer to develop than in Germany, Poland, Lithuania, Belarus and central regions of Russia, but they had a more perfect, convenient and reliable set of tools and accessories. With special land tenure rights, the Bashkirs could avoid compliance with the requirements of the Forest Service in Russia, which in 1882 had banned beekeeping in state forests as a source of forest fires.

In 19th century, due to deforestation and the destruction of the cultural traditions by the migrant population, Bashkir beekeepers developed 'Koloda' beekeeping. Koloda means hand-made hollows inside tree trunks [Picture set 3.2], which could be fixed high on a tree [Kosarev, 2014]. Trees with Koloda were considered by Bashkirs as their personal property and were marked with 'tamga' – distinctive signs of tribal affiliation. Every beekeeper knew his mark and did not touch the property of others and these trees with Koloda and Tamga traditionally were kept by a family for generations [Yumaguzhin, 2010].

In the second half of the 20th century

BEE BREEDING

Natural Tree Hollow Hive.

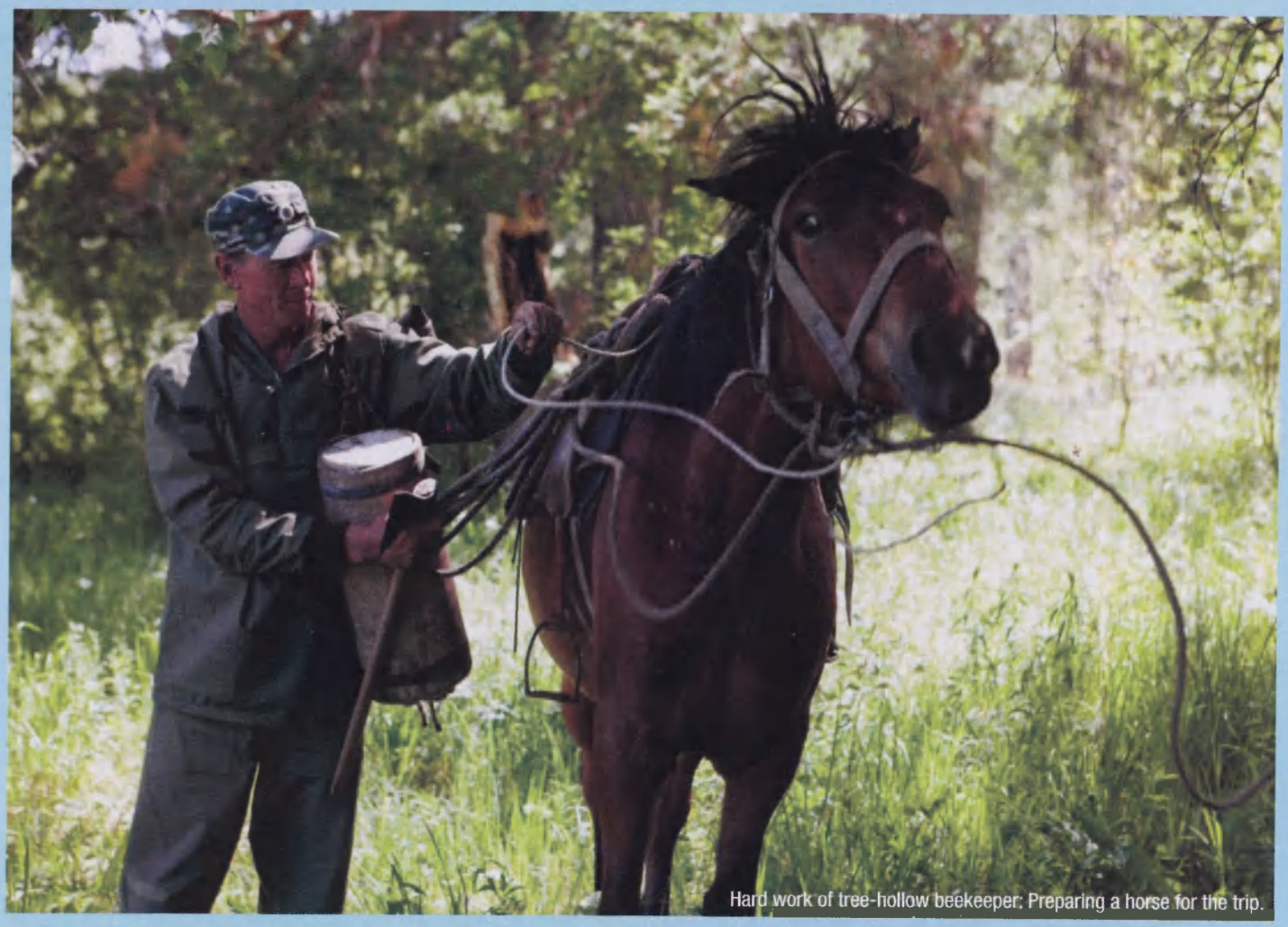
Artificial Tree Hollow Hive.

BEE BREEDING

Boards with signs 'Tamga' from a local national museum in National Park 'Shulgan-Tash'.

A tree with a 'Tamga' sign.

BEE BREEDING



Hard work of tree-hollow beekeeper; Preparing a horse for the trip.

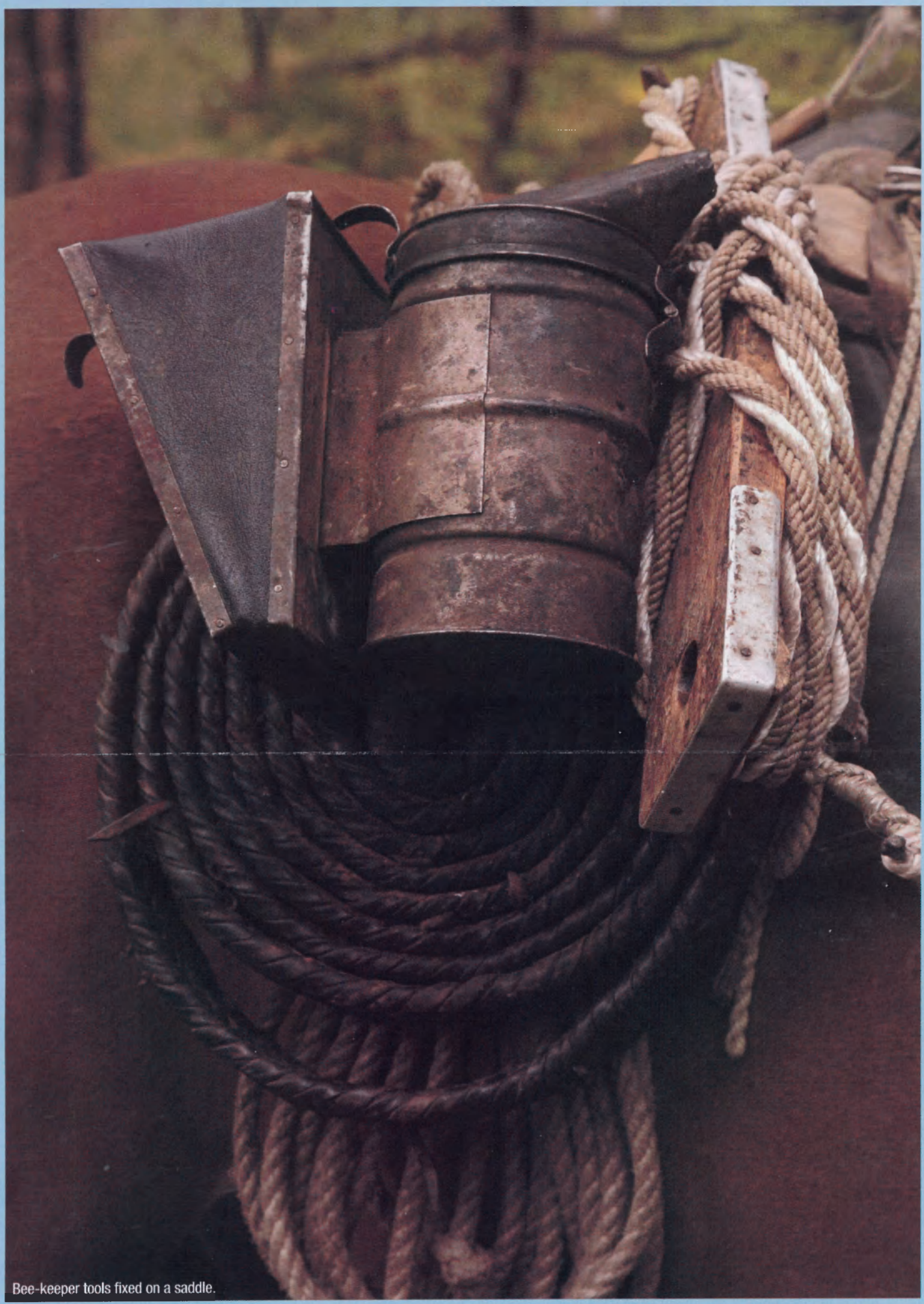
Climbing up a tree.

BEE BREEDING

Working at hive level.

Extracting honey.

BEE BREEDING



Bee-keeper tools fixed on a saddle.

BEE BREEDING

Tools are at work.

Bashkir beekeepers started using movable-frame hives, which gave rise to modern beekeeping. Despite the hard labour and low productivity, tree hollow apiculture in remote areas of the South Urals still continues. Inspections of hollow tree hive bees require work as high as 16 meters, and because they are located away from populated areas, the beekeeper has to travel on horseback a distance of 40 - 50 km per day [Yumaguzhin, 2010]. Tools used by Bashkir bee-keepers are mostly homemade but are similar to tools used in other countries. Tools unique to the Bashkir wild-hive beekeepers are the 'Kiram' and the 'Lange'. A Kiram is a braided leather belt up to 5 m in length for climbing up a tree. A Lange is a small portable platform or footrest, which is fixed on the trunk with a rope [Kosarev, 2014].

In the last few centuries, when there were enough natural hollows in the trees with bees, Bashkirs, like beekeepers around the world, in the autumn took all the honey from the colony and the bees, left without reserves, died. In spring, beekeepers checked these tree hollows, cleaned them and made ready for a new occupants by a swarm. This 'colony killing' system was used until the 19th century and in some areas until the 1950's. The advantage of this system is that new comb was created every year, tree hollows rot less and, as a result, bees were rarely sick, their body size did not decrease, no inbreeding and degeneration happened.

When the number of natural tree hollows declined sharply, beekeepers were forced to carefully treat the wild-hive bees and leave for the best of them a sufficient amount of honey for the winter. As a result, colonies were able to live for a long time in the same place [up to 18-25 years!]. Also, the beekeepers had to learn how to replace combs but the life of the hollows were reduced [Kosarev et al., 1999].

Wild-hive bees in the Ural area also have many natural enemies that weaken the family and cause their death. These are: Brown bears *Ursus arctos*, Pine martens *Martes martes*, Forest mouse *Apodemus uralensis*, Great spotted woodpeckers *Dendrocopos major*, European bee-eaters *Merops apiaster*, Big wax moths *Galleria mellonella*, European hornets *Vespa crabro*, Red wood ants *Formica rufa*, and Red wasps *Dolichovespula rufa*.

They also did not avoid modern honeybee diseases and parasites such as: Varroa mite - *Varroa destructor* [Ilyasov et al., 2014], Nosema - *Nosema apis*, Chalkbrood disease - *Ascosphaerosis* [Farkchutdinov], American Foulbrood - *Paenibacillus larvae*, and European Foulbrood - *Melissococcus pluton* [Kosarev, 1987; Bakalova, 2010]. These are more severe in modern, movable-frame hives than in tree-hollow hives. The population of tree-hollow bees has cyclical swings dependent on solar activity [Kosarev et al., 1999].

Currently, dark European bees exist in the southern Urals in the State Reserve 'Shulgan-Tash' where they live in natural and hand-made tree hollows. The Reserve was established in 1958 and it covers an area of about 54,000 acres. The bees also live in the regional nature reserve 'Altyn Solok' [an area of 222,000 acres, established in 1997] and the national park 'Bashkiria' [an area of 203,000acres, formed in 1986] [Kosarev, 2008].

At the end of 2014, these 3 national parks had about 1,200 trees with 'Koloda', the hand-made tree hollow hives, but only 300 of them had bees. About 4,000 colonies were kept in apiaries with modern movable-frame hives and 200 - 400 colonies were living in natural tree hollows. In 2012, these Reserves were listed as especially protected areas, together with a number of others, and acquired the status of a biosphere by UNESCO called the' Bashkir Ural' complex with a total area of 855,000 acres. The regional reserve 'Altyn Solok' is also protected by the Ministry of Environment of the Republic of Bashkortostan. Currently,

BEE BREEDING

in order to preserve the Burzyan honeybee, it is planned to expand the 'Shulgan-Tash' reserve in a north-west direction through undeveloped territory between the rivers Nugush and Uruk [Kosarev et al., 2002; Yumaguzhin, 2009].

The staff from Shulgan-Tash, Altyn Solok and the national park Bashkiria, together with local beekeepers, are constantly taking measures to increase the bee population and to carry on selection work to improve the immunity, winter hardiness and productivity of the Burzyan bees.

This policy of state-protected reservations allows us to save a unique population of these bees - *A. m. mellifera* in Eurasia in the face of new threats of spontaneous hybridization and habitat destruction [Yumaguzhin, 2009; Kosarev et al.., 2011].

References

Bakalova M.V. Symbionts of honey bee in colonies of State Nature Reserve «Shulgan-Tash» // Russian journal of beekeeping. 2010. V. 2. P. 12–13.

Brandorf A.Z., Ivoilova M.M., Ilyasov R.A., Poskryakov A.V., Nikolenko A.G. Population genetics differentiation of honey bees of Kirovskaya oblast // Russian journal of beekeeping. 2012. V. 7. P. 14–16.

Farhutdinov R.G., Ilyasov R.A., Yumaguzhin F.G., Tuktarova Yu.V., Shafikova V.M., Abdullin M.F. Biological stimulator for honey bee colony productivity with fungicidal activity // Biomics. 2014. V. 6 (2). P. 68-72.

Ilyasov R.A., Farkhutdinov R.G., Shareeva Z.V. Influence of acaricides amitraz and fluvalinate on average daily egg and total honey productivity of honey bee colonies // Biomics. 2014. V. 6 (2). P. 73-76.

Ilyasov R.A., Petukhov A.V., Poskryakov A.V. Nikolenko A.G. In the Urals preserved four population of dark European bee Apis mellifera mellifera L. // Russian journal of beekeeping. 2006. V. 2. P. 19-20.

Ilyasov R.A., Petukhov A.V., Poskryakov A.V., Nikolenko A.G. Local honey bee (Apis mellifera mellifera L.) populations in the Urals // Russian journal of Genetics. 2007b. V. 43 (6). P. 709-711.

Ilyasov R.A., Poskryakov A.V. Kolbina L.M., Nikolenko A.G. Saving Apis mellifera mellifera L. in the Udmurt Republic // Russian journal of beekeeping. 2007. V. 6. P. 13-14.

Kosarev M.N. Burzyan wild bees and varroosis // Russian journal of beekeeping. 1987. V. 9. P. 12–13.

Kosarev M.N. Saving of gene pool of Bashkir bees // Russian journal of beekeeping. 2008. V. 7. P. 8–10.

Kosarev M.N. Sharipov A.Ya., Yumaguzhin F.G., Savushkina L.N. Saving of gene pool and breeding of Burzyan wild bees. Materials of international conference «Honey World – 2011». Yaroslavl, 2011. P. 38–39.

Kosarev M.N. Wild bees beekeeping in present. Metodical recommendations for beginning wild bee keepers. Ufa: Informreklama, 2014. 50 p.

Kosarev M.N., Yumaguzhin F.G., Nugumanov R.G. About dynamics of the number of bee colonies of Bashkir population, occupancy of hollow trees nest and hives «Koloda» in State Nature Reserve «Shulgan-Tash» // Materials of international conference «Using of biologically active bee products in animal husbandry and veterinary medicine». M.: Ufa, 1999. P. 118–121.

Kosarev M.N., Yumaguzhin F.G., Saifullina N.M. The expansion area of the Nature Reserve «Shulgan-Tash» – is way to saving gene pool of native wild bees at South Urals // Proceedings «Environmental aspects of Yumaguzinski reservoir». Ufa: Gilem, 2002. P. 114–124.

Krivtsov N.I. The breed of bees for the northern regions of Russia. Materials of international conference «Honey World – 2011». Yaroslavl, 2011. P. 25–26.

Krivtsov N.I., Grankin N.A. Dark European bees breeding. Rybnoe: GNU NIIP. 2004. 140 p.

Nikolenko A.G., Poskryakov A.V. Polymorfism of loci COI-COII of mitochondrial DNA of Apis mellifera L. at South Urals // Russian journal of Genetics. 2002. V 38 (4). P. 458–462.

Sattarov V.N. Population genetics polymorphism of Bashkir honey bees Apis mellifera L. // Ph.D. thesis. Sankt-Peterburg-Pushkin. 2000. 24 p.

Shurakov A.I., Eskov E.K., Korobov N.V. Petuhov A.V., Simankov M.K., Subbotin V.A. Preservation of the gene pool of the dark European bees and the general ways of developments for beekeeping of the Perm region. Perm: Perm pedagogical university, 1999. 31 p.

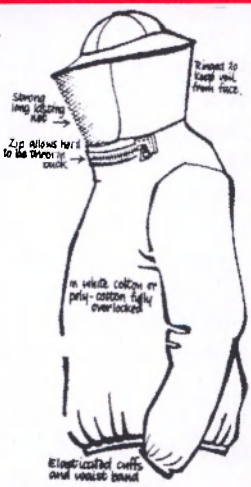
Yumaguzhin F.G. History and current state of wild Burzyan bees. Ufa: Gilem, 2010. 107 p.

Yumaguzhin F.G. The question about expanding area of State Nature Reserve «Shulgan-Tash» // Proceedings of Orenburg state university. 2009. V. 6. P. 461–463.

the Joyce Jones Bee Jacket

Produced since 1983 - and thousands sold

Takes the sting out of beekeeping. Fully tested and carefully made in our own apiaries.



100's sold at our very reasonable prices & no complaints

Flat top	£36.00
De lux	£48.50
Ex large	£57.00
Childs de lux	£41.00
Over trousers	£25.00

New All in one Jacket & Trousers (grey) Med, Large, Extra Large £90

*All prices include V.A.T. & postage

Obtainable only from Limetree Apiaries
Dewsbury Road, Elland HX5 9BE
tel/fax 01422 375713

Experienced Beekeeper required to help further build on our already successful commercial operation, at the moment we run around 300 colonies both Langstroth and B S Nationals, we also breed and supply Queens and Nuc's for sale in the UK.

Interested then drop us an email and tell us something about yourself.

Must hold a current driving licence.

mail@bee-equipment.co.uk