

## THE STATE OF BREEDING AND USE OF CASPIAN HORSES IN EUROPE AND AROUND THE WORLD

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### ABSTRACT

The Caspian horse is one of the oldest horse breeds in the world and probably the first oriental domesticated horse. For centuries though the breed had been considered extinct, until it was “rediscovered” in Iran in 1965. Although the breed is quite important in the history of horse breeding, it is still poorly described. The aim of the work was to present the characteristics of the breed (conformation, characteristics and usage) and to assess the current state of the population in Europe and around the World. A survey was conducted among 18 breeders and included 120 horses. The population size was estimated based on the analysis of two breed registries. This study confirms and provides information about Caspian horses available in the literature. Caspian horses can be very useful in refining small breeds of horses and could bring many profits in Polish breeding of sport ponies.

**Key words:** Caspian horse, Iranian horse, population, horse usage

### INTRODUCTION

Caspian horses (also called Caspian ponies) is an ancient breed of a small, oriental horse (Fig. 1), which originate from the region of former Persia, now Iran [Ghavi Hossein-Zadeha and Ghorbani 2018]. We know, from ancient art and literature, a small breed of Median horses – precious royal horses, which were imported also to Assyria, Greece and Egypt [Harrison 2000, MacDonald 2009]. In 2011, on the archeological site Gohar Tappeh in Iran, horse’s remains were discovered and dated to 3400 BC [Caspian Horse Society 2018]. Scientists identified the skeleton as identical with a skeleton of the extant Caspian horse. It may conduct that the first domesticated horses on the Middle East were directly ancestors of Caspian horses and Median horses did not extinct, as already considered decades ago. Hence a supposition that this small oriental horse is the Arabian horse’s ancestor – a very important breed in the world breeding [Nazifi et al. 2005, Hendricks 2007, Hosseini et al. 2016]. With the Muslim conquest of Persia, the famous royal horses disappeared and the world forgot about their existence [Amirinia et al. 2007]. The horse was redis-

covered by the American woman Louies Firouz in the 1950s by Caspian Sea south shores, in Elbrus Mountains [Firouz and Dalton 2013]. Then have been noted some breed characters, which distinguished this small horses and they was consider as a separate breed. They were called “Caspian” horses.

Atavistic features, including additional molar teeth, well develops inter-parietal bone instead of parietal crest in the skull, hooves characteristic rather for donkeys, not horses, etc.; indicate ancient origination of Caspians [Firouz 1978]. A research also displays differences: genetic (65 chromosomes, domestic horse has 64 chromosomes), physiological (eg. different hemoglobin and protein proportions, different ovary’s activity in mares) and anatomical differences (differences in skeletal structure and heart’s topography, lack of a cartilage in a tongue) compare to the horses other breeds [Bowling 1996, Shirazi et al. 2004, Nazifi and Rategh 2005, Rezaian 2006, Paryani and Gilanpour 2009a, Paryani and Gilanpour 2009b, Zamani-Ahmadm Mahmudi et al. 2010, Atyabi et al. 2012]. Thanks to the imports from Iran Caspian horses are maintained also in Europe, North America and Australia. According to the data, the pop-

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ulation has never exceeded 1,500 individuals in the world [Rousseau 2017, Caspian Horse Society 2018]. Due to breakdown of the breed into many counties, in each of them the breed has status of critically endangered [Equine Survival Trust 2018]. The Caspian Horse Society is an organization coordinating Caspian horses breeding. Caspian horses, despite of their appealing features and many breeding regions, are still unpopular in Europe and in Poland almost unknown. The aim of this study was overall characterization of Caspian horses breed and confronting information about them from literature with Caspian breeder's opinions.



**Fig. 1.** Caspian mare Dra Zolal, Germany (phot. K. Bańka)

**Rys. 1.** Klacz kaspijska Dra Zolal, Niemcy (fot. K. Bańka)

## MATERIAL AND METHODS

The quantity of the currently population was assess base on the Caspian Horse International Census [CHIC 2017] analysis updated in 2017 and Caspian Stud Book (January 2017). However, due to lack of reliable registry of horses' death, numbers from these lists are overstated. To assess actual number of living individuals of the breed assumed, that the horse live average 20 years, then counted all horses born after 1998.

To include in the study the biggest amount of horses as possible prepared an on-line survey directed to a Caspian horses' breeders and owners. The survey contained 25 overall questions (part 1) concern breed characteristic and seven detailed questions (part 2), in which asked about characteristic of the particular herds (e.g. age, sex, colour, usage). By Internet was found contact to the 41 facilities maintaining Caspian horses in any place of the world. Response on the survey obtain from 18 facilities from Europe (13, in it nine from UK) and USA (4) (question 1, one responder not specified localization). Responders were characterized 120 Caspian

horses in total, what states approx. 10% worldwide population. Sending the survey allowed on made a mail contact with breeders and obtained extra information not include in the form.

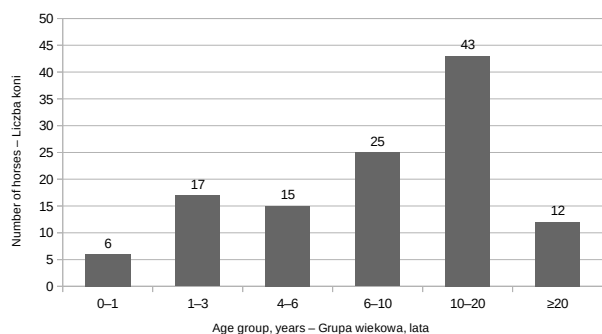
Observations were also conduct in one of the facilities (Stichill Stables in Scotland, owner Anna Bergmann). Three horses (pure blood Caspian and crossbreeds) were present in jumping, work in hand and free movement.

## RESULTS AND DISCUSSION

Breeding of Caspian horses is leading in 17 counties of the world, mainly in United States of America, United Kingdom, Iran and Australia (in total 83.48% of worldwide population). In 1965–2000 to the breeding had include 111 original Caspian horses, so called Foundation Horses – 72 mares and 39 stallions, coming from Iran. Till now in the Caspian Horse International Census registered 2160 horses: 1144 mares, 934 stallions and 82 geldings, and currently population reaches 1788 horses: 930 mares (52%), 781 stallions (44%) and 77 geldings (4%) [CHIC 2017]. In Caspian Stud Book since 1978 until 2017, input approximately 2100 horses [International Caspian Society 2018]. From the authors' assessment, derive that currently living population actually reaches approx. 1000 purebred Caspians. Similar state has V. Tollman, a member of CHIC, who is assessing that in the USA live about 450 Caspian horses, in Australia – up to 150, in UK – up to 400 and in Canada – maximally 150. That gives 1150 Caspian horses in total, that mean over 600 less than in the registry. There are about 500 Caspian horses in Europe. Even lack of data about stallions' castration overstate theirs number in the statistics.

The history of the Caspian horse's breed gives reason to believe that by this population's quantity, avoid foreign genes addition, and inbreeding depression too, is possible. Thanks to further carefully breeding and genetic material exchanging between the countries, and the best between a continents, there is a chance to maintain healthy genetic diversity of the breed. In analyzed population about 50% of individuals can be active in breeding (age and way of usage factors). Reproductive potential of the Caspian horse breed states approx. 500 mares in the world. However, number of mares actually using in breeding can be significantly lower, what prove the survey results (part 2. question 5. – q.2.5.). From among 66 mares only 39 (59%) is using in breeding. Quite big part of population state stallions (studied population – 37%, q.2.1), what is the result of breeding policy. It assumes that small defects do not disqualify the stallion as a sire, but determining should be utility value. From the survey, derive that studied population of Caspian horses is ageing population (q.2.2) (Fig. 2), however during last ten years the popularity of the breed has increased (q.1.4). Maybe it

is cause by free information and products flow nowadays, so it creates auspicious prognosis for the breed's future.



**Fig. 2.** Number of Caspian horses by age group

**Rys. 2.** Liczebność koni kaspijskich w poszczególnych grupach wiekowych

A relationship in a particular breeders' herds (q.1.12) has normal level (Table 1) and most breeders (68.75%) never observed inbreeding depression's symptoms (q.1.13), what coincides with research conducted by *Seyedabadi and Sofla [2018]*. A rest of breeders (31.25%) mentions predispositions to: Equine Metabolic Syndrome (and connected predisposition to laminitis), sarcoids, smaller size of body and sweet itch. However, from enumerate dysfunctions only smaller body size (one response) belongs to symptoms of the inbreeding depression. Remaining disorders a far less degree depend on genes, but rather are causing by maintaining conditions and individual features not racial features. Caspian horses have high genetic diversity in spite of small gene pool, what can be clarify, excluding bottleneck effect, by fact that all breeds derived from first domestication's regions possess the highest heterozygosity coefficient among animal breeds [*Warmuth et al. 2011*].

The responders are in 72.2% breeders, 16.7% users and 11.1% amateurs of Caspian horses (q.1.2). Motives of Caspian horses choosing instead other breeds (q.1.5) were overall the breed appeal (extraordinary history, oriental and elegant appearance, rarity, saving the breed from extinction) (11 resp.), Caspians sport skills (6), children's mount need (5), good temper and intelligence (3) and good health (2). Currently only 11.1% of the responders possess only Caspian horses (q.1.6). The rest, maintain simultaneously horses other breeds (21% oriental horses, 8.7% cold-blood horses, 47.82% ponies or small horses). A crossbreeding with Caspian horses by 31.25% responders was conducted, the rest (68.75%) have never done it (q.1.7). Main goal of the crossing is obtain taller ponies, what extends group of half-bred Caspians' potential riders. Remains aims were obtain a mount with more mild temper (compare to purebred Caspian), better conformation and proportions of horse

instead pony, or improve other breeds with ancient origination (e.g. Skyros pony). The Caspian horse passes on offspring a conformation's features (q.1.8) like beautiful head, long neck, thin legs, good tissues quality and hard hooves, "beauty and quality", or in Polish hippological nomenclature "nobleness". Above it the offspring inherits: sporting abilities (19.2% responds), particularly jumping and so called "heart to jumping"; spectacular movement, balance, endurance and good health, good temperament (19.2%), curiosity and kindness, willing and "enthusiasm" in work with a man (15.4%). Answers on that question confirm, the Caspian horse breed as an ancient, well-established long time ago and close related with nobility Arabian horses, has ability to faithfully passing on offspring its profitable characteristics. It seems to improving a horse breeds by Caspians, is the same as ameliorating by Arabian horse, but in miniature.

Responders keep their horses in combined (stable and pasture) (66.7%) and grass-kept systems (33.3%) (q.1.10). The Caspians are adapted to harsh conditions, so can be successfully kept outdoors, what has positive influence on their condition. Caspian horses quite well with changes and adapt to new circumstances (q.1.9) (Table 1). They characterize by generally good health and strong immunity (q.1.11) (Table 1) and very well conformation (q.1.14) (Table 1). Two owners (11.1%) are shoeing their Caspian horses (q.1.20), because their type of work demand it, the others (88.9%) are never shoeing their horses. Nobody ticks a respond that the horse demands shoeing due to hooves condition. Observed that Caspians' hooves are high, slope and have very high heels (it is not drawback, but racial characteristic). It is possible that other growing tempo, proportion and angles of the hooves, can be cause of different worn off tempo of hoof wall in this breed compared to others. On average trimming horses is necessary 6–8 times a year, while in Caspians it can be doing 1–3 times a year or more often depending on the horse's hooves condition [*Ghavi Hossein-Zadeha and Ghorbani 2018*]. Undoubtedly, great influence in this matter has horse-keeping system. Free access to a pastures and varied ground (especially dry and hard) allows for optimal hoof wall worn off and keeping good condition of hooves.

According to 92.3% responders, Caspian horses have any problems with reproduction (q.1.15). One of thirteen persons ticks, that in a mare occurs heat cycle issues (7.7%). The number of studied horses is too small to assess mares' maternal instinct, but on rise of outcomes can be consider Caspian mares do not diverge from other breeds statistics (q.1.16, 1.17). One per fourteen persons (7.1%) responds, that happened a foal rejection by a dam.

Caspian horses are the most frequently used under saddle (q.1.18) only by children (76.5%), in 17.6% by adults and children and 5.9% by adults. In spite of their small size, it is possible thanks to strength and capa-

**Table 1.** Selected questions about subjective score of Caspian horse breed features in 1–5 scale (in bracket number of survey question)

**Tabela 1.** Wybrane pytania o subiektywną ocenę cech rasy koni kaspijskiej w skali od 1 do 5 (w nawiasie podano numer pytania w ankiecie)

Question (no.) Pytanie ankietowe (nr)	Value 1 – Wartość 1	Value 5 – Wartość 5	Mean value Średnia ocen	SD
Adaptation abilities (9) Zdolności adaptacyjne (9)	low słabe	high duże	4.35	±0.70
Health status (11) Zdrowotność (11)	weak chorowite	strong odporne	4.41	±0.71
Level of herd's inbreeding/*nine herds (12) Pokrewieństwo stada/*dziewięciu stad (12)	small małe	large duże	3.23/*3.44	±1.30/*±1.23
Conformation correctness (14) Poprawność pokroju (14)	incorrect wiele wad	correct conformation poprawny pokrój	4.47	±0.62
Suitability for sport (19) Przydatność do sportu (19)	unsuitable nieprzydatne	suitable bardzo przydatne	4.76	±0.56

\* The question was answered by 14 owners. However, only 9 of them possessed the number of horses enough to be called a *herd*, that is enough for inbreeding evaluation (minimum 4 horses).

\* Na pytanie odpowiedziało 14 właścicieli. Jednak tylko 9 spośród nich posiada liczbę koni wystarczającą do nazwania ich stadem, a zatem do oceny pokrewieństwa (minimum 4 konie).

city appropriate to a mountain and primordial horses. The vast majority of responders (82.4%) considered the Caspian horse' breed very suitable to a sport (q.1.19) (Table 1), what suggest the breed is definitely in sport pony type. The result confirm information from literature, which say that distinguishing features of the breed are jumping, excellent movement and easy in cooperation [Morris and Langrish 2008, Swinney and Langrish 2012]. Caspian horses are characterized by brilliant balance in movement, their anatomical conformation allows on extraordinary for their size a stride elongation. From among surveyed 88.9% answered that the horses do not make problems when handling or under the saddle (q.1.21), and 11.1% that they do. In horses in 67% facilities, there are no vices (q.1.22). The remaining indicated cribbing, bucking under saddle, kicking and biting among a stallions or chewing on wood. Both questions concerned welfare of animals and behavioral problems, which depend from many factors. However, can be assuming studied population does not diverge in behavior from other breeds. One of the surveyed indicates that under this circumstance Caspian horses are particularly demanding due to their high intelligence. As animals curious from nature, are getting bored very fast and in the case lack of proper stimulation, can quicker and easier "be by a vice affected" compared to other breeds.

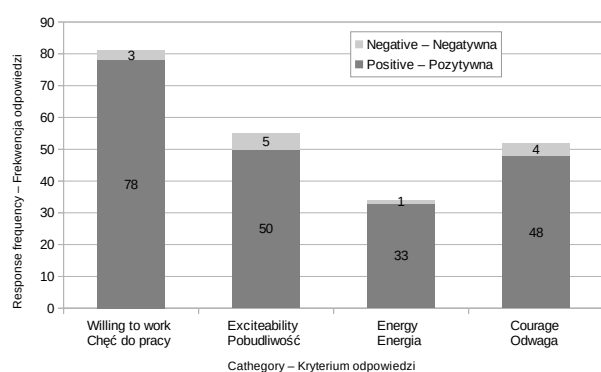
Asked if Caspian horses are distinguishing in positive way among other horses breeds and how, if yes (q.1.23). In 94% obtain positive opinions, indicates on sensibility, unique temper, good health, immunity, extraordinary willing to work, endure and easy training thanks to high intelligence. Driving predisposition allows on using these horses also by adults. However, the main role Caspians

play as a children's sport mounts. According to surveyed Caspians are superior to "round, short-legged" ponies, because their proportions and movement are mapping large horses' features in miniature and make them better adjusted to the youngest riders. Caspian horses reveal lot of willingness to make a relation with a man. The breed can attracts new breeders according to 41.2% of surveyed (q.1.24), according to 5.9% will not be appealing and 52.9% can not prognosis it. Among responders, fifteen have membership to breeding societies (q.1.25). European breeders (64.71%, nine resp.) are affiliated in Caspian Horse Society (CHS), above it two of them belong to other national organizations (Sweden, France). Breeders from USA belong to: The North American Caspian Society (NACS) (1) and The Caspian Horse Society of the Americas (CHSA) (1). The sixth organization is a service registering the horses – Caspian Registry Services (CRS) (2).

Between 120 horses belonging to responders are 66 mares (55%), 44 stallions (36.7%) and 10 geldings (8.3%) (q.2.1). The most horses (35.83%) was at the age 10–20 years, least (5%) foals up to one year (q.2.2). Remaining age categories was: 1–3 year – 14,16%, 4–6 year – 12,5%, 6–10 year – 20.83%, 20 and more years – 10%. The graph clearly indicates on unfavorable phenomenon "ageing population" (Fig. 1). Caspian horses are very lively, happens they live up to 30 years (in 2019 Caspian mare Contessa Siyroun celebrated its 37th birthday) [Hendricks, 2007]. They also keep reproducing ability, even up to twenty several years. A structure of analyzed population in term of the colour (q.2.3) was: horses bay – 53%, chestnut – 16.5%, grey – 14.8%, black – 8.7% and dun – 3.5%. There was mentioned colours as

roan (2.6%) and buckskin (0.9%) too. However till now in Caspians did not identified nor Rn roan gene nor Cr cremello gene conditioning buckskin colour [Hendricks 2007]. Probably it was wrongly identified bay or dun colour, what is not easy without a gene test. Above it, in Caspian's population had found genes conditioning colours traits like rabicano, sabino1, pangare, flaxen and sooty. Opalescent shimmer of coat is more frequent in stallions than mares. Gene D (characteristic for primordial horse breeds) in Caspians occurs often with chestnut genes as a red dun colour. Majority of the population has a dorsal stripe. It is connected with dun gene variant "nd1 – non diluted 1", which gives phenotype without dun dilution, but often with primitive signs like the dorsal stripe or stripes on limbs [Veterinary Genetics Laboratory 2018].

The studied horses have average high 118 cm (q.2.4). The most horses (48.84%) are in category 110–120 cm, and just under 10% counts at the withers less than 110 cm. The value is very close to mean provides by Breed Standard, this is 117 cm [ICSB, 2018]. In studied group of horses 50% are using in a breeding, 17.5% in recreation (q.2.5). A forms of sport usage of Caspians are jumping – 13.3%, dressage – 12%, driving – 7.5%, pony games – 6.7% and endurance – 1.2%. Among other forms of using (2.5%) were mentioned Eagala (psychological therapy with horses participation), flat and trotter racing and polo game. The each horse was evaluated in terms of temper (q.2.6). A survey studies about horse psychology are subjective and irrational (e.g. in comparison to behavioral tests). However, surveyed circled suggested traits in total 220 times, what gives relatively reliable statistical portrait. Caspian horses are: willing to work – 35.45%, calm – 22.72%, brave – 21.81%, vigorous – 15%, hyperactive – 2.27%, skittish – 1.81%, unwilling to work – 1.36%, lazy – 0.45%. The owners are generally evaluated their Caspian horses' temper very positive (Fig. 3).



**Fig. 3.** Evaluation of Caspian horses' character traits

**Rys. 3.** Ocena cech charakteru koni kaspijskich

## CONCLUSIONS

The survey results confirm and supply information about the Caspian horse breed available in the literature. The breed is characterize by many appealing features of exterior and interior and has great utility values. Caspian stallions are very useful in improving other breeds, and could be as important in small horses breeding, as Arabian and Thoroughbred horses in sport horse breeding. Thereby we can suppose that using of Caspian stallions could bring great profits in refining of a Polish sport pony's population. The Polish ponies would purchase light, elegance shape of a sport horse, better movement and jumping abilities, simultaneously maintain strong immune of primordial animal. Those improved by Caspians blood, would have bigger chance of compete with west breeds of sport ponies and the youngest riders would have better access to the high quality mounts. This factor seems to be one of the crucial for equestrian development in Poland.

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## STAN HODOWLI I UŻYTKOWANIA KONI KASPIJSKICH W EUROPIE I NA ŚWIECIE

### STRESZCZENIE

Koń kaspijski to jedna z najstarszych ras koni na świecie i przypuszczalnie pierwszy orientalny udomowiony koń. Przez wieki sądzono, iż rasa ta wymarła, dopóki nie została „ponownie odkryta” w 1965 roku w Iranie. Rasa ta jest dość istotna w historii hodowli koni, jednak nadal mało znana. Celem badań było przedstawienie charakterystyki tej rasy (pokrój, cechy i użytkowanie) oraz ocena obecnego stanu populacji w Europie i na świecie. Badania ankietowe, przeprowadzone wśród 18 hodowców, objęły 120 koni. Liczebność populacji została oszacowana na podstawie analizy dwóch rejestrów rasy. Badanie potwierdziło i uzupełniło dostępną w literaturze wiedzę o kaspijskich koniach. Konie kaspijskie mogą być bardzo użyteczne w uszlachetnianiu małych ras koni oraz mogłyby przynieść wiele korzyści w polskiej hodowli kuców sportowych.

**Słowa kluczowe:** koń kaspijski, koń irański, populacja, użytkowanie koni