Part 5.1. Methods of population control. Irreversible withdrawal, its methods and effect on subpopulations.

5.1. How Irreversible Trapping "Works": The Question of Effectiveness

5.1.1. Components of the population.

The first (and still common) way to regulate the number of stray dogs and cats was their irrevocable removal from the streets (the forms of this withdrawal varied depending on the era and degree of civilization of a particular country). Now, in most cases, this seizure is called trapping (although the fate of the animal being caught can still be completely different). In the arguments of supporters of CNVR programs, the following thesis is often heard: irreversible trapping is completely ineffective, and therefore there is no alternative to CNVR. At the same time, they often refer to some "scientific data" - but do not give references. Which is not surprising - there is simply no scientific evidence on the inevitable ineffectiveness of trapping.

Consider how the number of animals is formed in any limited area. There is a simple formula describing this:

Number = birth rate + migration from the outside – mortality – migration outside.

All variables in this formula depend both on the biological characteristics of a given animal species and on specific habitat conditions.

If the number of animals is constant, the values of the first two variables in the sum are equal to the values of the second two. If the number of animals falls, then the last two variables add up to the first two. With regard to subpopulations of stray dogs and cats, their irrevocable seizure (capture) by the city authorities can be interpreted in terms of this formula as a forced component of mortality (if the seizure is carried out with immediate killing), or as forced and controlled migration (if live individuals are caught and exported). If, over a period of time, these measures (individually or collectively) exceed the arrival of new animals (including such a form as the discarding of host animals - a kind of "migration from the outside"), then the number of animals will fall. To what extent it will fall, whether it will recover again and how soon - this is determined by the circumstances.

Below we consider these circumstances, having previously noticed that at first we will only talk about the population role of irreversible seizure, and not its specific methods (shooting, trapping with immediate killing or trapping with further placement in a shelter). These methods and their impact on the effectiveness of withdrawal are discussed in paragraph 5.1.3.

5.1.2. Withdrawal in terms of efficiency.

Irrevocable removal of stray animals (most often dogs) from the urban environment (public territory, public areas) is a common method provided for by the laws of almost all developed countries and regulations of many regions and cities of Russia. Usually, all stray dogs are subject to municipal capture, less often - cats. In practice, it is the capture of dogs that prevails, the reasons for which are complaints and applications of the population and enterprises, anti-epidemic campaigns or the desire of the authorities to make the city cleaner (before any event). Capture of cats, as a rule, occurs in parallel with the capture of dogs; and in appreciable quantities - usually only in those cities where the number of stray dogs is relatively small, there are no packs or they are few in number and concentrated in industrial zones. That is, stray dogs do not reduce the number of cats to values that do not cause inconvenience to the population (where packs intensively destroy cats, the capture of cats is usually not carried out - for example, in Moscow there is practically no centralized capture of these animals for a long time).

If we consider the effectiveness of irreversible seizure to be its ability to reduce the number (presumably - to zero), then the capture, respectively, can be: a) completely ineffective, b) partially ineffective, c) absolutely effective.

(a) Completely ineffective exemptions are rare (despite the claims of CNVR propagandists). "Completely ineffective" means that for a single moment in a given area (in a subpopulation of stray animals of a certain city or its separate area) the number of adult animals does not decrease; there are no artificially induced fluctuations in abundance, and it is determined only by the supporting capacity of the medium. This happens if the intensity of capture is so small that it only replaces part of the "natural" mortality or migration. For example, if a part of puppies that would not have lived to puberty is removed from litters. Or if dogs are removed in a small area, which are immediately replaced by others who were previously impatiently waiting on the border of the territory protected by these dogs from strangers (this situation is usually characteristic of very small areas such as a yard).

A special, sometimes occurring case of almost ineffective trapping will be the intervention of the "human factor", when after the capture (as stray) of incorrectly, "semi-freely" kept guard dogs at any enterprise, the watchmen immediately re-start new ones - as unconditionally necessary for their work. Although more often in large cities, stray conditionally supervised dogs live and are caught at enterprises (they often live there "in addition" to real guards in booths and enclosures), which are not of particular working value in the mass, the restoration of the number of which (due to migration or the introduction of new ones by people) takes some time, according to another scenario described below. However, this circumstance requires the extension of the city's rules for keeping animals to dogs belonging to organizations (see below 5.1.3.)

b) Most often in real life, we are dealing with examples of partially inefficient (or partially effective) trapping. There are two varieties of it: trapping with subsequent complete restoration of the number, and trapping with incomplete recovery of the number.

Trapping with full recovery of numbers. In the first case, a certain proportion of animals are removed, followed by a relatively long break, allowing the number to recover. After a certain period of time, a new catch follows (in the "uncivilized" case - shooting or baiting). Often this happens when a critical mass of complaints about animals accumulates again, or an outbreak of a dangerous disease occurs. Regarding stray dogs in the conditions of Russia, such a picture of rare captures is observed either in remote "remote" areas of cities, or in small settlements where there is no own trapping service and where teams of catchers occasionally visit - hired by local authorities from other cities once a year or several years. In many, usually underdeveloped, countries, rare sweeps of pariah dogs are often timed to coincide with regular outbreaks of rabies or some important public events when it is necessary to show the city in an attractive way for guests (political summits, international sports events ...). Sometimes in this case, the animals are not destroyed, but simply caught and taken far beyond the cities (where they are given to their fate) - in order to avoid mass direct killing (which would worsen the image of the city from an animal protection and populist point of view).

According to the same principle, irregular catches of cats occur - but usually much less often, due to the lower conflictogenicity of these smaller animals.

The recovery of the number occurs both due to underfished female individuals, and due to the migration of stray animals from outside the catching area or due to discarded-lost owners. Under-caught individuals are both "constantly hiding" with an increased degree of ferality, and, on the contrary, conditionally supervised, protected by guardians who hide them from capture - for example, in enterprises.

The time it takes to fully restore the number of animals depends on the number of unfished animals and on migration. In most cases, when a third or more of individuals are removed, it requires from six months to a year - for urban canine subpopulation with moderate migration. The relatively slow recovery is explained by the fact that a dense canine population (for example, close to the maximum possible number), as a rule, is relatively poor in adolescents (individuals aged from six months to a year) - their 10-20 percent. But it is this young that is the immediate reserve that begins to replenish the ranks of adults in this area after capture. In addition, it is the young that are prone to migration - that is, they provide replenishment through migration. Some acceleration in the recovery of adult numbers can be observed only a few months after capture, which is due to a slightly higher level of survival of small (up to 4 months) puppies in a sparse subpopulation (due to less competition for resources). That is, after capture before the transition to the category of adolescents, a larger proportion of small puppies will live than before. But until this younger shift reaches adulthood, it will take several months. (See 5.1.5)

Another factor in residential areas that slows down recovery is that a variable, socially determined component of the food base requires a significant amount of time to recover – these are the very random bait points of stray dogs (see 3.4.2). Unlike the permanent points that arise from a constant source of food waste– such as garbage dumps, canteens, markets – random bait points require a combination of circumstances when new dogs will again attract the attention of potential caregivers. These random circumstances require time for their secondary occurrence - the dog must find a place of potential complementary foods, it must be noticed by guardians, etc. - and only after that the constant stay of the dog will begin, and then joining it new ones, breeding in this place, etc. The more random factors contributed to the emergence of packs in this area, the longer it will take to restore the number (you will have to wait for a new "favorable" confluence.

circumstances). An example from Petrozavodsk observations is several rather large (up to 5-6 individuals) flocks that lived in the city center (dense residential and administrative buildings), after complete capture in 2004 - 2006, have not recovered to the present (2009).

It should also be noted that the effectiveness of trapping, as a rule, is higher, the smaller the contribution of self-reproduction of already stray dogs to maintaining the number. It is easier to catch (and then find owners for them) former possessive animals than semi-feral animals that grew up on the street. (Moreover, self-reproduction is already characteristic of quite numerous subpopulations in "neglected" cases). This is important to remember when deciding on a strategy for solving a problem in a particular city. It is not necessary to bring the situation to a situation where mass seizures will be required after uncontrolled growth in numbers.

Migration from outside the city of new, "aggressive", unfamiliar with urban realities, dogs, which are often frightened by CNVR supporters, also cannot be a factor that significantly changes the situation. Such dogs (often of the socio-ecological type "feral" - see part 3.2 and Appendix 3) precisely because of the greater fear of the disturbing influence of people, are less likely to linger in the city (usually visiting residential areas at night). In addition, the population density of such dogs is usually lower than that of urban dogs, and there are simply no such mass gatherings that could immediately replace the caught urban ones.

Trapping with partial recovery of the number. In the second case of partially effective trapping, the number does not recover to the end at all, that is, it does not reach the level of the supporting capacity of the medium. This is the most common scenario for Russia (both in the past and now). It can be likened to mowing the lawn - the grass on it grows, but does not grow to the maximum height. As in the previous case, after the capture there is a recovery - after all, some of the dogs remain inaccessible for capture, some come from the owning subpopulation or migrate from the outside. But full recovery does not occur - the next catch in this area occurs before the number reaches the original (or maximum possible) values. Especially if the dogs find themselves in a public area that is actively visited by people.

The total number of animals in this case fluctuates around a certain equilibrium value, determined both by the intensity and frequency of captures, and by the potential for recovery of the number. With a decrease in the rate of capture, this equilibrium level increases, with the intensification of trapping, it falls. (For example, in Petrozavodsk, during the work of one brigade for the capture of dogs in 2004-2005, the number of adult stray dogs fluctuated around the value of 1,200 individuals, when the work of two brigades began in 2006, it decreased to about 900 individuals.) An increase in the equilibrium level can also occur at a constant rate of capture, if conditions arise more favorable for the appearance or reproduction of stray dogs (the values of the two variables in the first part of the above equation increase). For example, they began to throw away animals more or the food base increased - this happened in many Russian cities in the 90s. The rate of capture remained the same, or decreased (due to economic problems) - and he did not have time to compensate for the growth in the number of dogs.

In Russian conditions, even the most intensive trapping rarely reduces the number of animals to zero, since there is an influx of owners on the street that is not intercepted by an effective system of shelters (although trapping can maintain the number at a level that does not allow the

existence of packs of stray dogs). In addition, the methods of capture (see 5.1.3.) and some other circumstances make certain categories of dogs relatively inaccessible to him - first of all, "conditionally supervised" in enterprises under the "protection" of their guardians. As a rule, the desire and determination to regulate the number of animals based on their territory is entirely in the hands of the management and employees of enterprises, who may not feel (for the time being) the desire to limit the number of "their" dogs or do not want to pay money for calling a trapping team (trapping in an non-municipal territory may be paid).

Sometimes we hear the opinion (perhaps not unreasonable) that municipal trapping in a particular city could be more effective if it were not for the deliberate abandonment by the catchers of some of the dogs "for divorce" (where the payment goes "over the heads").

Interestingly, trapping with partial recovery of the number, despite its non-absolute, but still effective - nevertheless, in popular sources in favor of CNVR is often presented as completely ineffective (and therefore unnecessary) on the basis that "dogs still run and they do not become less", "70 (option - 120) years caught - and not caught", etc. Moreover, the negative perception is aggravated by statistics - the number of annually "useless" caught and, most importantly, the dogs being killed. What is not taken into account is that, although stray dogs continue to persist as a phenomenon, their number is still less than it could be. This illusion among the population (but not among the most stubborn supporters of CNVR) is usually dispelled when trapping is canceled - then the increased number of dogs and the increase in "packing" quite effectively contrast with the "catch" times (as is the case in Moscow).

Another note - it is the first scenario with a complete recovery of the number (relatively long intervals between captures) - is accompanied by even greater protests of the part of the population that feeds stray dogs, since over a relatively long period of recovery they manage to become attached to animals. And the scale of the seizure in this case is greater. Unfortunately, this can happen as a result of the misuse of CNVR (the period of application of which will be the period during which the subpopulation will restore – and even increase – its number).

Cats in this respect are a relatively low-conflict species, so the "comfort threshold" (the number of animals that causes a sharp protest) when coexisting with them is quite high - which causes a fairly significant accumulation of them in the urban environment (or in one particular place) before a new capture. This is a common occurrence both for Russia and for other countries. That's why TNR makes more sense for cats than CNVR dogs and in terms of spending on municipal trappings – as a rule, they won't be as regular as to significantly reduce the number of dog trappings – because of the social "insignificance" of cats.

c) absolutely effective trapping, the number of homeless animals is close to zero - in the urban environment it is achieved not only by the regularity of seizure, but also by additional measures (promotion of a high culture of keeping, the fight against overproduction and discarding - that is, with sources of replenishment of the number, and the lack of reproduction of the homeless (do not have time to start breeding on the streets themselves). This is the situation with stray dogs in

many European countries. As for cats, then, in the presence of free-roaming host cats, the complete removal of cats from the streets as a task is not set.

5.1.3. A note about trapping methods, and their impact on efficiency. Today, the most widely used method of trapping in Russia is the use of remote (with the help of pneumatic weapons) immobilization of dogs with muscle relaxant drugs (that is, substances that cause immobilization by blocking the conduction of nerve impulses to the muscles). The most commonly used of them is dithylin. Usually, due to intentional overdose (and the dangerous dose is only relatively slightly different from the dose causing immobilization), dogs die at the site of capture due to paralysis of the respiratory muscles. The method has also been (and is being applied) previously in some Asian countries.

This method is relatively simple and cheap, and potentially allows you to maintain high rates of withdrawal – but has its inevitable drawbacks. And the most important of them is the very killing of animals on the spot. This circumstance causes a protest of the population, and as a result - attempts to somehow counteract the capture. For example, in the case when a bitch gives birth to puppies somewhere under the garage or in another shelter in yards or in an enterprise, witnesses do not seek to cause a deadly capture, but try with one success or another to distribute puppies, or attach a dog (this is at best – and then not always effective), and often do nothing at all, except for feeding animals. This ends with the emergence and growth of the pack with all the negative consequences that follow: often in the end, all the same people still cause capture, but it is more difficult to completely catch a large semi-feral pack than one dog. Sometimes opposition to capture is active - animals are hidden or driven away by catchers. Catchers often refuse to go to catch in "too crowded" places to avoid conflicts. That reduces the effectiveness of trapping, increases the recovery potential, reduces preventive functions (that is, does not give the opportunity to remove the dog from the street before it went wild and (or) began to multiply).

In addition, this lethal method prevents the legal capture of owner dogs that are free-range, as required by the usual norms of developed countries (and many Russian local rules of detention).

A significant change in the method of trapping and the creation of an infrastructure for holding and attaching, shelters and holding points (see part 5.1.) – that is, an approximation to what exists in developed countries – can significantly change the situation. At the same time, the methods themselves can remain just as effective – for example, the use of other, less dangerous drugs or mechanical devices ("flying net" or net) for remote capture. Such an approach will make it possible for the population to cooperate more with trapping services, and will allow with greater justification to fight against the fight against capture on the basis of the argument "animals are pathetic", to conduct explanatory work against "feeding flocks". After all, dog lovers in this case will have the opportunity (with the proper organization of the shelter system!) to help attach animals from shelters, help shelters, etc. That is, the resources that are now spent on "feeding packs" to a certain extent can be redirected to help shelters.

That is, we are talking about making in the above equation the main limiting factor not the current forced mortality, but forced migration (to the shelter).

Increasing the efficiency of trapping will lead to a further decrease in the "equilibrium level" - that is, simply to a decrease in the number. And also - to a change in the structure of subpopulation, the displacement of the main share in it from pack semi-feral animals to less numerous, solitary, more socialized to human dogs (often - former master, or conditionally supervised), the chances of attaching which are greater.

All together, respectively, will lead to a decrease in the number of animals caught and euthanized. In parallel, it is necessary to begin to increase the culture of keeping animals and fight overproduction - the effect will be much more noticeable and irreversible. At the same time, special attention should be paid to dogs based on the territories of enterprises and organizations. In principle, they should also be subject to general rules for keeping animals in settlements and the need to regulate their number - which local governments need to understand if they really want to change the situation, and not be limited to formal control only of "public territories". If the management and employees of enterprises insist on the presence of dogs, then we can consider the option of limited CNVR with strict control of the isolation of this group - which is one of the mandatory guarantees of the success of this method, alternative to irreversible capture (for more details, see part 5.3., "Comparative effectiveness of methods").

We also add that the effectiveness of irreversible capture depends on the initial number of dogs. The smaller it is (the situation is less neglected), the more effective the capture will be from the very beginning; and there may be no need for CNVR at all (there are no conditionally supervised dogs rooted in one place or another).

So, in order for trapping to be more effective, it must be regular, humanized (non-lethal) and accompanied by preventive work on animals from the subpopulation of owners.

Of course, from an animal protection and populist point of view, even such a catch will lose to total CNVR - since it provides for the placement of animals in detention centers and shelters, in order to avoid overflow and paralysis of their work, some of the animals will have to be euthanized. And at first - a significant part (in those cities where the situation is "neglected"). However, in those cities (and there are also many of them), where numerous packs have not formed, among the relatively few homeless people former owner dogs predominate, the proportion of euthanasia can immediately be relatively small, and include mainly non-viable, newborn offspring, aggressive, etc. (that is, immediately approach the situation in the most developed Western countries).

In addition, it is still necessary to achieve the introduction of civilized methods of euthanasia - which is a separate task, taking into account the ban in Russia for the veterinary use of those drugs (barbiturates) that are used for euthanasia in the West. As an attempt to "circumvent" this "drawback" of irreversible capture in the eyes of the population (as a rule, having vague ideas about the prospects of a particular strategy), one can regard the decision of the Moscow government in 2008 to create giant shelters of indefinite (lifelong) detention for the entire army of Moscow stray dogs. It is unlikely that this tactical solution can be called optimal (although the strategy of abandoning CNVR as the main method outlined in Moscow is quite consistent with the situation). Shelters of any size will still sooner or later overflow (if the capture is really at least somewhat intense - the influx of animals will be preserved, albeit less abundant, since catching all the dogs at once and no longer needing to be caught is a perfect utopia); and maintaining appropriate standards for keeping animals in shelters for thousands of dogs is an extremely

difficult task (there is a high risk of turning them into overcrowded concentration camps without appropriate care). Therefore, it is necessary to properly prepare public opinion, educate the population about the prospects of the method used - let the euthanasia be, but it will be controlled and humane (in contrast to lynchings and semi-legal trappings during CNVR, or the current municipal destruction with the help of ditilin, which is common in Russia, in which no chance is left to any captured animal). Even the current legislation allows the use of quite humane methods of euthanasia (for example, the preliminary immersion of the animal in anesthesia before using muscle relaxants). And most importantly, by changing the number of dogs caught and the number of euthanized dogs, we will be able to objectively judge the success of the entire program: the smaller both of them are, the closer we are to the ideal of victory over homelessness or, at least, to the intermediate goal - the transfer of all caught dogs to new or old owners.

As for cats, taking into account the practice of free range and the relative lack of conflict of these animals, it seems to make sense to apply irreversible capture for them primarily in places where their presence is undesirable (the territory of health care institutions, etc.), in the event of conflict situations, with the threat of epidemics, or to prevent the death of the cats themselves (for example, during the redevelopment of residential areas, the demolition of buildings where cat colonies were located, etc.). The possibility of applying the CNVR method for cats is much wider than for dogs.

5.1.4. Illustration of the effect of irrevocable withdrawal. An illustration of the above can serve as observational data in Moscow. The first refers to the times of the Soviet Union.

The methods of trapping in the cities then, of course, were simple, the overexposure was short-lived; often (in the 80s) there was an unofficial cruel capture "on dog hats" (then which were in a certain sense fashionable); sometimes trapping was replaced by just grass (before the Olympics in Moscow). However, trapping coped with keeping the numbers at relatively low levels. As a rule, everything is found out with a simple survey of city residents - "yes, there used to be fewer dogs." Of course, it's not just about trapping – it's about the relatively stricter approach of the authorities and public consciousness to keeping animals in those days. There was no such "carelessness" as in the present time.

Unfortunately, there are almost no scientific studies on this subject - then almost no one studied stray dogs in our country. The more valuable is the small material that we have.

We are talking about the Ph.D. thesis of A.D. Poyarkov, a current employee of the A.N. Severtsov Institute for Problems of Ecology and Evolution. He studied the micropopulation (local settlement) of stray dogs near the main building of Moscow State University in Moscow on the then Lenin Hills and in the adjacent vast industrial zone behind Lomonosovsky Prospekt. Observations were mainly carried out from 1980 to 1985 In 1981, the population density in this area was about 13 dogs per square kilometer, and in 1985 - about 7 dogs per square kilometer (the decrease was caused simply by regular capture in this place - however, not only official, but also, according to Poyarkov, illegal, "on hats").

Thus, these results illustrate the effect of regular (but uncivilized) trapping, which reduced the number almost twice in 4 years. At the same time, a certain part of the dogs was beyond the reach of the catchers, being under the protection of the watchmen of the enterprises (according to Poyarkov).

By the way, these data are indicators for a certain type of urban environment, that is, the industrial zone, where the "study site" was mainly located. In other (residential) districts of Moscow, as Poyarkov himself writes, "in the vast majority of districts of the city, the density is inferior to that in the study area many times" (Poyarkov A.D. Social Organization of Stray Dogs in Urban Conditions: Diss. ... cand. Biol. Sciences. Moscow. 1991. – P. 50). For comparison, you can see what is the population density in today's Moscow according to the accounts of the same A. Poyarkov (2006, Report on Monitoring and Accounting of Stray Dogs for the State Unitary Enterprise SODZH).

For the type of urban environment, the "fractional industrial zone" (namely, such at MSU according to Poyarkov) - 74 dogs per sq. km. Specifically for the accounting site at MSU - 120 individuals per sq. km! (excluding puppies).

Outside the industrial zones: for the urban type of "new buildings" - 33 dogs per sq. km. For Stalin-Khrushchev buildings - 22 individuals per sq. km. (Recall that these are just those areas in which in the 80s the density was many times higher than 13 individuals per sq. km).

In other words, and somewhat coarse, according to A. Poyarkov in Moscow:

- in the early 1980s. in fractional industrial zones there were 7 - 13 stray dogs per sq. km. km, in residential areas - "many times" less than 7 - 13 dogs per sq. km;

- In 2006, there were 74 stray dogs per square kilometer in industrial zones (and in some places 120), in residential areas - 22 - 33 dogs per square kilometer.

Thus, it is not a great exaggeration to say that since the days of the Soviet Union, the density of subpopulation of stray dogs has increased in Moscow by almost an order of magnitude!

Of course, it is necessary to make a reservation again - in this increase, not only the weakening of trapping in the crisis 90s (which led to the emergence of many flocks) played a role, but its complete (official) cancellation in the 2000s (with the introduction of the CNVR program, which further aggravated the situation). There were also secondary reasons - the level of responsibility for keeping dogs fell (both simply by citizens and employees of enterprises and organizations) and the pollution of the city increased (see part 3.3.). A "chain reaction" of guardianship has begun - up to a certain point, the following phenomenon is observed: the more stray dogs, the more food they are offered by carers and random passers-by, and the more guardians themselves appear.

So, trapping is usually the main limiting factor that determines the number of dogs in the settlement. In its absence, the number increases, and it is limited by other factors - first of all, available food, shelters and survival of young animals.

The greatest effectiveness of irreversible seizure (in the case of dogs) can be expected when it is tied to a system of holding points and shelters, combined with the fight against overproduction.

5.1.5. Note. Why regularly trap stray dogs can be comparatively effective.

Consider a simplified (but not very) model. Suppose there is an isolated group (settlement, micropopulation) of stray dogs from 100 adults (fully adults will be conventionally considered animals older than 1 year) individuals. The ratio of females to males is equal. Females reproduce, and quite intensively - although not reaching the maximum possible indicators for the species: each female gives birth 2 times a year for 5 puppies. This is almost at the limit for a dense population (some homeless females can give birth every six months to 8 to 10 puppies - but there are also those that give birth much less often and have fewer cubs in the litter). In total, 50 females bring about 100 litters per year, which is about half a thousand puppies per year. There are 8 litters per month, containing about 40 puppies. About a third of adult dogs die from "natural causes" per year (this is close to the data of real observations in a number of cities). In a month - 3 dogs die, therefore, 3 dogs from those who are less than a year old, become in their place. Each month, the following demographic pattern is observed: 100 adult dogs. 40 puppies born in the current month. 20 puppies left over from last month. 13 three-month-old puppies. The distribution of puppies by age should be explained separately. The death (and disappearance for other reasons) of two-thirds of puppies under the age of three months is a common phenomenon and is confirmed by observations. It is at this age that puppies are most vulnerable to diseases, attacks of relatives, destruction by people. Homeless puppies are attached by compassionate people also for the most part under the age of three months - older ones are often difficult to catch. So, next: 10 - four months. 7 - five months. 5 - six months. And 3 to 4 adolescents and young animals from 7 to 11 months. Such "growing ups" are obtained only about 15 - 18% of the adult population - which is quite close to many observations in real conditions. (For example, in Petrozavodsk packs in 2004 we observed no more than 14% of dogs aged 6 months to a year. According to Poyarkov (1991), in the micropopulation of stray dogs in Moscow studied by him for 5 years, the average proportion of adolescents (over 6 months) was about 11%.) Mortality among adolescents and young animals under the age of one year is noticeably less than among small puppies. And they are the ones who directly replace deceased adults. So, in addition to hundreds of adults, we have a little more than a hundred puppies and teenagers - with an absolute predominance of puppies younger than 6 months. Let's imagine that in one month half of the animals were caught - in all age groups (females were caught along with the broods, as is often the case). Suppose even that now in a sparse population we can expect that the survival rate of the remaining puppies will increase dramatically (by reducing competition, better nutrition of females and reducing the danger of epidemics) and up to 4 months will survive not a third, but two-thirds of puppies. Or the birth rate will increase - up to 8 puppies every six months. But even in this case, the full recovery of the number of adult dogs will occur no earlier than 11 months or a year after capture - until the unfished puppies grow up. After all, as we found out, the immediate reserve, ready to immediately replace the captured adults - namely, the young from 6 months to a year - is relatively small. If a third is immediately caught (but only half of the puppies will survive up to 4 months), then the recovery will take about the same. If the survival rate of puppies is determined not by competition, but by other reasons that do not depend on population density, then recovery will require even more time (since survival will not increase). If during this period a new catch is carried out until complete recovery, and

then another - then the number will never be restored to the original value. Most likely, it will fluctuate at a lower, equilibrium value, determined by the intensity and regularity of new catches. That is, it will be a "partially effective" catch without a full recovery in numbers. So, the relatively slow recovery of numbers immediately after capture is explained by the fact that usually the population is very rich in small puppies (there are not much fewer of them than adults), but relatively poor in adolescents - and it is they who serve as an immediate recovery reserve immediately after capture. This ratio is confirmed by the usual work of trapping services, in which at least half of the incoming animals are puppies. Thus, if you carry out regular trapping in shelters of unlimited reception, then you can gradually reduce the population size, and from a certain point the capture will affect mainly the young, it is easier to catch, and this is exactly the contingent that will objectively be more suitable for attachment (not so feral). Of course, this is a simplified model. For example, migration and discarding are not taken into account, however, migration in a real city can be leveled by trapping in neighboring territories. Trapping for relatively large (over a few dozen individuals) clusters is rarely a one-month action, since usually such a number of dogs is distributed over a fairly extensive territory, which the trapping services "process" with varying intensity for several weeks and months. On the other hand, the reproductive potential of dogs in urban conditions is rarely realized at such a high rate. But, one way or another, the above calculations and considerations should always be considered when comparing different methods, especially when claiming "the ineffectiveness of capture in any case and the effectiveness of CNVR in any case."