



Function of regulation of animal breeding to maintain species purity and genetic diversity for conservation and utilization

Putu Diana Andriyani¹, I Gusti Ayu Ketur RH², Lego Karjoko³

¹ Master of Law Student, Universities Sebelas Maret, Surakarta, Indonesia

^{2,3} Lecturer, Faculty of Law Universitas Sebelas Maret, Surakarta, Indonesia

Abstract

The regulation about captivity of wildlife is regulated by a Minister of Forestry Regulation Number: P. 19/Menhut-II/2005 About Captivity of Wild Plants and Animals guided by Law Number 5 Year 1990 about Conservation of Living Natural Resources and Ecosystems, Government Regulation Number 8 of 1999 concerning Utilization of Wild Plants and Animals. In the implementation, captivity of animals aims to obtain specimens in guaranteed quantity, quality, species purity and genetic diversity. It needs a study through law theory of Fuller whether in the regulation about the cavity has been run as the function. Thus, it can reach the goal of the captivity of animals. The result of discussion is that there are indicators revealing that captive regulations are deemed lacking in their delivery and overlap. However, overall captive regulations can be considered successful in achieving breeding goals in order to obtain the purity of captive species.

Keywords: conservation, captivity of animals, animals breeding, function of regulations

1. Introduction

The international treaties regulated legal instruments concerning animal protection in the first period, these agreements based on the orientation of the utilization of available resources, factors of economic importance, social status, ownership rights, hunting rules and regulations, commercialization, power and other actions which consider the stock of animals in abundance ^[1]. However, since the Stockholm Declaration 1972 introduced the concept of sustainable development, what was initially as a sectoral, bilateral, and regional began to change, this concept underlies the philosophy of many international treaties on animal protection began global and multilateral.

Law Number 5 of 1990 regarding the Conservation of Living Natural Resources and Ecosystems stipulated Animal protection in Indonesia. In the beginning, the law was formed because of the consideration of the importance of Indonesia's living natural resources and their ecosystems so they need to be managed and used for the welfare of the community at the present and in the future under the mandate of the Constitution of the Republic of Indonesia Article 33 paragraph (3), so it is necessary to make legal protection in the management and preservation of living natural resources, specifically about protecting endangered species. Law Number 5 of 1990 explains about the living natural resources, namely animal and plant resources which together with the surrounding non-biological elements as a whole form the ecosystem.

Many wild animals hunting activity used as a means of personal enrichment and daily consumption, if this activity is uncontrolled and left unchecked and no follow-up, it will endanger the animal population. Conservation efforts are done as a medium to conserve animals and their efforts to

utilize. Conservation is a human effort to preserve or protect nature. According to environmental science, conservation is an effort to protect and care for the environment and natural resources (physical), management of certain quantities that are stable during chemical reactions or physical transformation and long-term efforts and protection of the environment ^[2]. Conservation is divided into two, namely in-situ conservation and ex-situ conservation. The in-situ conservation focuses on conserving natural resources in their natural habitat, while the ex-situ conservation is an effort to protect natural resources by taking from natural habitats that considered unsafe and preserving them in artificial protection.

The main function of ex-situ conservation is to make efforts to care and breed various species of animals to form and develop new habitats as a means of protection and preservation of nature that is used for the development of science and technology and for healthy recreation facilities ^[3].

One type of ex-situ conservation is captive breeding. Captive breeding is an effort of propagation of wild plants and animals while maintaining the purity of their species in controlled environments. Regulations concerning captivity are contained in the Regulation of Minister of Environment and Forestry Number: P.19/ Menhut-II/2005 about the Captivity of Wild Plants and Animals, established with the aim of obtaining wild plant and animal specimens in quantity, quality, species purity and guaranteed genetic diversity, for the importance of utilization to reduce direct pressure on populations in nature; and getting administrative

¹ Birnie, Patricia W, Alan E Boyle, International Law and the Environment, New York, Oxford University Press, 1992, hlm. 421

² Takdir Rahmadi, Hukum Lingkungan di Indonesia, Jakarta, PT RajaGrafindo Persada, 2015, hlm. 176

³ Suhandi AP, Perilaku Harian Orangutan (Pongo pygmaeus Linnaeus) Dalam Konservasi Ex-situ di Kebun Binatang Kasang Kulim Kecamatan Siak Hulu Kabupaten Kampar Riau, Jurnal Online Mahasiswa Faperta Vol. 2, 2015, hlm. 14

and physical certainty that the utilization of wild plant or animal specimens that are declared to have originated from captive breeding activities is actually from captive breeding activities.

The Natural Resources Conservation Center supervised and assisted in implementing of captive breeding. The concept of Natural Resources Conservation Center began in the era of the Dutch East Indies. The Dutch Indies Government established an agency called “*Natuur Bescherming Afseling Ven's Lands Flantatuin*” in 1937 which the main duties and functions are to monitor and control nature reserves and wildlife reserves, to work on a budget and increase the number of employees^[4].

The rise of animal cruelty and animal illegal trade cases that cause the extinction of animals require a study on how to preserve animals in Indonesia, especially the correct utilization of animals through captivity. How does regulation on animal breeding can function properly so its implementation by the Natural Resources Conservation Agency and surrounding communities can run properly or there may be gaps in their implementation? Based on this background, the writer is interested in studying more deeply regarding does regulation about captive breeding can work to maintain species purity and genetic diversity for conservation and utilization?

2. Research Methods

This study used a normative legal type of research. Normative research is also referred to as Doctrinal law research. According to Terry Hutchinson^[5], doctrinal law research is carried out based on literature studies, which focus to analyze primary and secondary legal materials. Where primary legal materials are applicable legal regulations and legal cases, while secondary legal materials include legal opinions in legal books and journals.

3. Results and Discussion

3.1. Implementation of animal breeding

Wild natural resources which include wildlife, is a naturally renewable resource because in their management they apply protection, preservation, and utilization so the community and legal entities can manage and utilize the wildlife sustainably in an artificial habitat^[6]. This is referred to as Ex-situ Conservation, namely the process of protecting rare and endangered plant and animal species by taking them from unsafe or threatened habitats and put them under human protection^[7]. One ex-situ conservation effort is animal breeding.

According to the Regulation of Minister of Environment and Forestry Number: P. 19/Menhut-II/2005 about the Captive Breeding of Wild Plants and Animals, captive breeding is an effort of propagation of wild plants and animals while maintaining the purity of its species in controlled environments. Therefore, it can be concluded that the purpose of captive breeding, especially wild animals captive breeding is to obtain specimens in quantity, quality,

species purity and genetic diversity that is guaranteed, for the benefit of utilization so as to reduce direct pressure on populations. The rise of wildlife hunting causes the population to decrease, with the existence of captive breeding is expected to continue to make updates to existing animal populations. Besides, with the existence of the wild animal breeding, there will be administrative and physical certainty that the utilization of the specimens is really from captivity, and not the result of illegal hunting.

Accordingly, human-caused environmental degradation and the associated suffering of animals should be of concern for conservationists and animal welfarists alike—a common ground on which to coalesce. Overall, however, neither group has unequivocally recognised that human-caused suffering of wildlife is a welfare concern that deserves serious consideration^[8]. Also according to the The Universal Declaration of Animal Rights formalized with a text that was revised by the International League of Animal Rights in 1989, was mentioned in its opening as follows^[9]:

“Considering that life is one, all living beings having a common origin and having of diversified in the course of the species, considering that all living beings possess natural rights, and that any animal with a nervous system has specific rights, considering that the contempt for and even the simple ignorance of, these natural right, cause serious damage to Nature and lead men to commit crimes against animals, considering that that coexistence of species implies a recognition by human species of other animal species to live, considering that the respect of animals by humans is inseparable from the respect of men for each other.”

Thus, it needs a special attention for animal as a way to respect the natural rights of animals. In observing the survival and welfare of animals, there is an indicator known as The Five Freedom, which is a simple method for evaluating and analyzing animal welfare, including appropriate steps to improve the quality of animal life. The contents of the Five Freedom are^[10]:

- a. Freedom from Hunger and Thirst: provide enough food and drink to ensure animal health
- b. Freedom from Discomfort: provides a suitable environment for animals and a pleasant environment.
- c. Freedom from Pain, Injury, and Disease: prevent the possibility of getting sick or suffering from injuries, and if the animal still experiences illness or suffers from injuries, they need to be examined by a veterinarian.
- d. Freedom from Behave Normally - Freedom to Behave Normally as an animal: provides a broad environment, which allows animals to make natural movements and mingle with other animals of the same type.
- e. Freedom from Fear and Distress: guarantee a good condition and treatment of animals to avoid animals from boredom, stress, fear, and distress.

⁴ <http://ksdae.menlhk.go.id/sejarah-ksdae.html>, 5 Agustus 2019

⁵ Johnny Ibrahim, *Teori dan Metode Penelitian Hukum Normatif*, Malang, Bayumedia Publishing, 2006, hlm. 44

⁶ Wulandari C, *Agroforestry: Kesejahteraan Masyarakat dan Konservasi Sumberdaya Alam*, Lampung, Penerbit Universitas Lampung, 2011, page 78

⁷ Nabila Alfasifa, *Bainah Sari Dew, Ex-Situ Wildlife Conservation in Taman Satwa Lembah Hijau Bandar Lampung*, *Jurnal Sylva Lestari*, Vol. 7 No. 1, 2019, page 72

⁸ PC Paquet and CT Darimont, *Wildlife Conservation and Animal Welfare: Two Sides of The Same Coin?*, *Animal Welfare*, Universities Federation for Animal Welfare, Universities Federation for Animal Welfare, Hertfordshire, 2010, page 178

⁹ Victoria Parker, *Animal Rights Let's Think About Animal Rights*, Production Capston Global Library, London, 2014, page 6

¹⁰ Nur Huda, *Peran Animals Asia dalam Penganggulangan Penyiksaan Hewan di Cina*, *Jurnal Hukum Internasional*, Volume 1, No. 3, 2013, page 5

With the indicator of animal welfare, it is the responsibility of the breeder to pay attention to animal conditions, because it can impact on the process of reproduction and breeding of captive animals so the purpose of captivity itself will not be achieved. Unfortunately, there are no laws and regulations governing specific references such as what indicator makes the captive wild animals considered being healthy and prosperous. Everything is based on the intuition of the breeders themselves and is the rights of the breeders.

Besides animal welfare, captive breeding also faces several obstacles in the form of numerous cross-breeding of wild animals resulting in the emergence of illegal captivity and the goal of captivity is not achieved, namely maintaining the species purity, this can impact on the destruction of biodiversity. According to Article 15 paragraph (1) Regulation of the Minister of Environment and Forestry Number: P. 19/Menhut-II/ 2005 about the Captive Breeding of Wild Plants and Animals which states that to maintain the purity of wild species, captive breeding units are prohibited from conducting cross-breeding (hybrids) either between types and types of children, for protected species originating from natural habitats except for research purpose to support the breeding of aquaculture or fisheries.

Natural habitat is an environment where animals can breed naturally, so it can be concluded that the location determined as a natural habitat should not be touched by the community. However, there are some people who still do some tricks to get an animal broodstock for captivity, they try by releasing domestic animals into the forest, so the wild animals can mate with domestic animals. When a person breeds the results of the cross-breeding, it is against the purpose of the captive breeding, and that violates the rules and regulations of captive breeding.

But, there are rules which state the use of wild animals through the crossing system, this means the regulations are overlapping so it makes the policy team, in this case, the Natural Resources Conservation Center have a little difficulty in taking action. As stipulated in the Government Regulation of the Republic of Indonesia Number 8 of 1999 about the Utilization of Wild Plants and Animals Article 13 paragraph (1) states that the results of cross-breeding can be done only after the second generation of protected wild animals, and after the first generation for unprotected wild animals, and after propagation for protected plants. The article states that as long the crossbred generation it is not a breed from nature then it does not matter, but because of limited regulations and people's ignorance, it causes many violations. The existence of hybridization can affect the survival and genetic purity of wildlife, so it is against the purpose of captive breeding.

Larson and Fuller stated that domestication is not only about breeding, but also leads to the process of the genetic evolution of animals where their offspring become more receptive to human control^[11]. This explanation indicates that the process of crossbreeding is only limited to human control of animals, as a means of pleasure. However, it cannot be denied that the hybrid process can help food security. Unfortunately, the community is still not oriented in that direction. Most people consider the results of the crossbreeding as a source of money solely because of its exotic nature. Furthermore, if it is served as food, it is still

inferior to the commerciality of hunted animal meat. Due to the weak law enforcement and the lack of public awareness to comply with the rules, the husbandry of animals resulted from crossbreeding cannot be utilized to the fullest.

3.2. The function of regulation of animal breeding to maintain species purity and genetic diversity in the interest of preservation and utilization

Regulations about wild animal breeding refer to Law Number 5 of 1990 concerning Conservation of Natural Resources and Their Ecosystems, Government Regulation Number 8 of 1999 concerning Utilization of Wild Plants and Animals, and Minister of Forestry Regulation Number P.19/Menhut-II/2005 concerning Cultivation of Wild Plants and Animals, and Minister of Environment and Forestry Regulation of the Republic of Indonesia Number P.20/Menlhk/Setjen/Kum.1/6/2018 concerning Types of Protected Plants and Animals. The various regulations are examined whether their functions have been running properly to preserve the purity of protected species.

In determining whether a regulation policy of the captive breeding has worked well as its function to achieve the objectives, a determinant indicator is needed using the principle of Legal Certainty by Lon L Fuller. It asserts that positive law must be under morality. There is a stable and rational-legal order according to the positivism, where the law must be seen as a rational structure^[12]. Fuller also stated that certainty is needed regarding the rules and their implementation.

Fuller's theory emphasizes that the point of positive law must meet eight moral requirements^[13]. In this case, to examine whether the existing breeding regulations are fulfilling and functioning properly, an analysis is needed, including:

- a. There must be rules as guidelines in making decisions. The law is a configuration towards decisions taken as a concrete step in its application in a fair and wise system regarding the legal rules. Every decision taken has a legal force that cannot be contested and is final. In this case, Law Number 5 of 1990 concerning Conservation of Natural Resources has mandated with certainty that an action in the form of animal breeding is required to utilize and conserve animals. The animal breeding is regulated more clearly through Government Regulation No. 8 of 1999 concerning Utilization of Wild Plants and Animals and Minister of Forestry Regulation Number P.19/Menhut-II/2005 concerning Captive Breeding of Wild Plants and Animals. The practice of captive breeding is regulated in more detail in Minister of Forestry Regulation Number P.19/Menhut-II/2005 containing provisions concerning breeding activities, administration of captive breeding management and control of captive breeding utilization, and is supported by Minister of Environment and Forestry Regulation of the Republic of Indonesia Number P.20/ Menlhk/ Setjen/ Kum. 1/6/2018 concerning Types of Plants and Animals Protected. The Natural Resources Conservation Agency (BKSDA) is always guided by those regulations. Even in

¹¹ Mukhlisi, *Domestikasi Satwa Liar: Antara Peluang dan Tantangan untuk Ketahanan Pangan*, Swara Samboja, Vol. VII, No. 2, 2018, page 32

¹² Khuzaifah Dimiyati, *Teorisisasi Hukum Studi Tentang Perkembangan Pemikiran Hukum di Indoneia 1945-1990*, Genta Publising, Yogyakarta, 2010, page 69

¹³ Hayat, *Keadilan sebagai Prinsip Negara Hukum: Tinjauan Teoretis dalam Konsep Demokrasi*, Padjadjaran Jurnal Ilmu Hukum, Vol. 2, No. 2, 2015, hlm. 393-495

- terms of making an SOP on captive breeding policy, they are also guided by the Ministerial Regulation. Therefore, it can be clearly said that the regulation on captive breeding has been going well according to its function. The ministerial and government regulations about illegal crossbreeding of wildlife in natural habitats is also used as a reference for the BKSDA not to provide captive breeding licenses for illegal activities. Thus, the existing rules are final.
- b. Regulations which become guidelines for authority must not be kept secret but must be announced. The regulations on captive breeding as a guideline for implementation become a common right to be known and socialized so that they can be understood to form a similar perception to the construction of a conceptual and transparent paradigm of the existing regulations. Therefore, the strength of the regulations emphasizes understanding which, when understood, can immediately be obeyed not to commit violations. According to Widodo as Coordinator Yogyakarta BKSDA Forest Security Protection, The Natural Resources Conservation agency has an agenda of meeting with breeders at least once a year. It is a coaching activity to make the breeders or communities aware of the rights and obligations as wildlife breeders. Unfortunately, even though the rules have been enacted, there are still blind legal breeders. Some stated that they do not understand several articles or rules that result in obstacles in the field.
 - c. Regulations must be made to guide future activities. It can be said that the current law applies with the principle of realistic and proportional enforcement to every activity currently done. Minister of Forestry Regulation Number P.19/Menhut-II/2005 regulates the obligations of breeders as well as the procedures for licensing and distribution permits for the breeding of animals and their chicks. The decision letter of the head of the Natural Resources Conservation Agency regarding licensing and distribution of animals stipulated on the recommendation to the breeders to carry out obligations in accordance with existing laws and regulations. When the breeder neglects and violates one of the points in captive breeding, they may be subject to administrative or criminal sanctions. Therefore, it can be concluded that the regulations regarding captive breeding are in principle valid at the time of enactment.
 - d. The law must be made in such a way that it can be understood by the people. Hierarchically, the people have the right to know, understand, and comprehend the applicable legal regulations. However, in reality, people are often apathetic towards the regulations, except those that are directly related. Bali starling breeders stated that when the BKSDA held a meeting to discuss captive breeding, they preferred not to pay too much attention. BKSDA also provides more counselling in the form of breeding procedures compared to the law, although it does not deny that the implementation of captive breeding regulations exists. There are even breeders who do not understand some of the terms in breeding regulations. It results in a lack of understanding of the regulations by the community, and if not careful, can lead to violations. Efforts to introduce existing regulations are still not carried out proportionally. Only information from various groups is not valid. The obligation of the government, especially BKSDA and the regional government in disseminating the existence of captive breeding regulations, is to be fully obeyed. Therefore, the implementation of the law runs in accordance with the desired expectations. However, this problem actually lies with the executor rather than the rules of captive breeding.
 - e. Regulations may not conflict with each other. The existence of regulations is made to regulate people's lives so that they are systematized and well-structured towards all forms of action. Wild animal breeding is regulated through Law Number 5 of 1990 concerning Conservation of Natural Resources and Their Ecosystems, Government Regulation Number 8 of 1999 concerning Utilization of Wild Plants and Animals, and Minister of Forestry Regulation Number: P.19/Menhut-II/2005 concerning Captive Breeding of Wild Plants and Animals. All of these regulations are continuous without conflicting with the social habits of the community and the existing rules. One rule is integrated with each other's existence. However, there is one problem regarding the crossbreeding of wild animals as it is known in accordance with the purpose of captive breeding according to Regulation of the Minister of Forestry Number P.19/Menhut-II/2005. It stated that to obtain the purity of animal species, the wild animals who are not mated with the same sex will disrupt the existing genetic diversity that exists. However, Government Regulation No. 8/1999 allows second-generation crossbreeding for protected wildlife or research purposes. Unfortunately, for policy implementers, this rule is considered too ambiguous. Moreover, it is worsened by the apathy of some people who are concerned with the economic aspect because the animals produced from crossbreeding certainly have unique features that are sought after, resulted in frequent violations of these rules. BKSDA will also be challenging to make decisions because the regulation is deemed not to provide details on the breeding of animals from crossbreeding. Therefore, it can be said that the captive breeding arrangement has been perfectly functioning, but there are still vulnerable legal loopholes that result in losses not only for the community but also the government.
 - f. Regulations should not require behavior outside the capabilities of the parties bound in it. The parties referred to here are BKSDA and breeders in particular, who have limited abilities. The rules on captive breeding will become a barrier when the rules are considered burdensome for the implementers of the policy and the community. Arrangements regarding captive breeding must follow with the ethics of community life. Therefore, permission for harassment from the village government is needed in making breeding licenses. It is intended so that the implementation does not disturb the surrounding community. Therefore, in this indicator, the function of the regulation on captive breeding has been running according to its purpose.
 - g. There must be the firmness of law. The law becomes absolute regulations that must be obeyed by everyone. Whoever violates it, they must be sanctioned following applicable regulations. The law has a formal legal value with the firmness of sanctions that follow. The regulation on captive breeding has clearly stated that

there are criminal and administrative sanctions for violating those stipulated in Article 89 and Article 90 of the Minister of Forestry Regulation Number P.19/Menhut- II/2005, which also refers to Law Number 5 1990 concerning Conservation of Natural Resources and Their Ecosystems. Therefore, this function has also been fulfilled properly. BKSDA has confirmed that they are guided by the applicable rules. The licenses of the breeders who have violated will not be issued.

- h. There must be consistency between the regulations as announced and the actual implementation. Everyone must obey and follow the rules, including the regulators themselves. Consistency is the responsibility of the government in implementing it, in this case, the law enforcers. The breeding rules have been implemented well by the BKSDA and the breeders. The enthusiasm of the community in implementing captive breeding is also high because in addition to being viewed economically, it also helps in the preservation and use of animals. Furthermore, although there is still some illegal captive breeding, the implementation of the its function has been running properly and consistently.

4. Conclusion

Based on the indicators by Fuller theory, the regulations regarding breeding can be said already achieved half of it's purpose to maintain species purity and genetic diversity for conservation and utilization. Although the indicator about regulations which become guidelines for authority must not be kept secret but must be announced, has a little problem because the apathetic of community, many of them still don't understand the content of the regulations. And the indicator about regulations may not conflict with each other also has distinction which still has vulnerable legal loopholes regarding hybridization. But as a whole, the regulations of captive breeding can be function fully to maintain species purity and genetic diversity for conservation and utilization.

5. References

1. Birnie Patricia W, Alan E Boyle. *International Law and the Environment*, Oxford University Press, New York, United States of America, 1992, 421.
2. Johnny Ibrahim. *Teori dan Metode Penelitian Hukum Normatif*, Bayumedia Publishing, Malang, Indonesia, 2006, 44.
3. Khuziaifah Dimiyati. *Teorisasi Hukum Studi Tentang Perkembangan Pemikiran Hukum di Indoneia 1945-1990*, Genta Publising, Yogyakarta, Indonesia, 2010, 69.
4. Takdir Rahmadi. *Hukum Lingkungan di Indonesia*, PT RajaGrafindo Persada, Jakarta, Indonesia, 2015, 176.
5. Victoria Parker. *Animal Rights Let's Think About Animal Rights*, Production Capston Global Library, London, England, 2014, 6.
6. Wulandari. *Agroforestry Kesejahteraan Masyarakat dan Konservasi Sumberdaya Alam*, Penerbit Universitas Lampung, Lampung, Indonesia, 2011, 78.
7. Hayat. *Keadilan sebagai Prinsip Negara Hukum: Tinjauan Teoretis dalam Konsep Demokrasi*. *Padjadjaran Jurnal Ilmu Hukum* (Universitas Padjajaran). 2015; 2(2):393-495.
8. Nabila Alfasifa, Bainah Sari Dewi. *Ex-Situ Wildlife Conservation in Taman Satwa Lembah Hijau Bandar*

- Lampung. *Jurnal Sylva Lestari*. 2019; 7(1):72.
9. Nur Huda. *Peran Animals Asia dalam Penganggulan Penyiksaan Hewan di Cina*. *Jurnal Hukum Internasional*. 2013; 1(3):5.
10. Mukhlisi. *Domestikasi Satwa Liar Antara Peluang dan Tantangan untuk Ketahanan Pangan*. *Swara Samboja*. 2018; 7(2):32.
11. PC Paquet, CT Darimont. *Wildlife Conservation and Animal Welfare: Two Sides of the Same Coin*. *Animal Welfare (Universities Federation for Animal Welfare Hertfordshire)*. 2010; 19:178.
12. Suhandi AP. *Perilaku Harian Orangutan (Pongo pygmaeus Linnaeus) Dalam Konservasi Ex-situ di Kebun Binatang Kasang Kulim Kecamatan Siak Hulu Kabupaten Kampar Riau*. *Jurnal Online Mahasiswa Faperta*. 2015; 2:14.
13. *Sejarah Organisasi Direktorat Jenderal Konservasi Sumber Daya Alam dan Ekosistem*. <http://ksdae.menlhk.go.id/sejarah-ksdae.html>. 5 Agustus 2019.
14. *Undang-undang Nomor 5 Tahun tentang Konservasi Sumber Daya Alam Hayati dan Ekosistemnya*, 1990.
15. *Peraturan Pemerintah Nomor 8 Tahun tentang Pemanfaatan Tumbuhan dan Satwa Liar*, 1999.
16. *Peraturan Menteri Kehutanan Nomor P. 19/Menhut-II/ tentang Penangkaran Tumbuhan dan Satwa Liar*, 2005.
17. *Peraturan Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia Nomor P.20/ Menlhk/ Setjen/ Kum. 1/6/ tentang Jenis Tumbuhan dan Satwa yang Dilindungi*, 2018.