Report of the National Forest "Green Corridor'

Examination Committee

December 13, 1'999

National Forest "Green Corridor" Examination Committee

Introduction

The Forestry Agency stated in the Basic Plan for Administration and Management (settled on December 25, 1998) that it would try to conserve forest ecosystems in a more comprehensive and effective manner by establishing "Green Corridors" following a changeover to national forest management that focuses on maintaining and promoting public functions.

The National Forest 'Green Corridor" Exploratory Conference was established in September 1999, commissioned by the Director-General of the Forestry Agency, and has considered establishing standards and handling policies for "Green Corridors." Based on examination results, we have prepared a plan for "the Establishment of 'Green Corridors' in National Forests" as a policy to be followed in establishing "Green Corridors."

The National Forest 'Green Corridor' Examination Committee will submit a proposal to the Forestry Agency to establish "Green Corridors" in accordance with the plan for "Establishment of 'Green Corridors' in National Forests."

The Establishment of "Green Corridors"' in National Forests

I. Purposes of establishing 'Green 'Corridors' in national forests

National forests are distributed widely over mountainous regions in remote mountains and considered a national asset that is owned by the people. Most national forests have a scenic beauty and maintain prolific forest ecosystems where rare wildlife dwells. In national forests with these characteristics, protected forests such as Forest Biosphere Reserves that comprise primeval forest ecosystems have been establish to preserve national forests containing a natural environment in order to preserve the natural environment, wildlife, and genetic resources.

Environmental problems are global issues and there is a need to promote sustainable forest management based on the "statement of Forest Principles" and to try to preserve biodiversity in accordance with the "National Biodiversity Strategy." Thus, preserving forest ecosystems and preventing reduction in populations and species extinction from reduced genetic variations due to population reduction is a necessity. These actions are taken to promote sustainable forest management and maintain biodiversity on a broad scale.

Moreover, following a great changeover to national forest management that aims to maintain and promote public functions as a result of radical reforms in national forest operations, there is a need to struggle, to conserve and preserve forest ecosystems in a more comprehensive and effective manner.

"Green Corridors" considered thus far serve to expand wildlife habitats by securing paths for movement and to preserve populations and genetic and biological diversity through exchanges among separated populations. Therefore, these corridors are important for coexistence between humans and wildlife and should be improved in quality and quantity.

The functions of "Green Corridors" are the same in private and national forests. However, in private forests where management is smaller in scale, and performed according to various managerial policies, it is difficult to hastily establish "Green Corridors" since they involve restrictions of use of forests. Thus, it seems appropriate to establish "Green Corridors" in national forests where there are vast areas that maintain prolific forest ecosystems.

In national forests, forest reserves are already designated to preserve wildlife and genetic resources. Isolated and scattered, many of these reserves are only effective for the preservation of particular species. To preserve and broaden the diversity of wildlife, protected forests must be enlarged and paths for movement secured in order to expand wildlife habitats and promote exchanges.

Thus, it seems most practical and effective to establish "Green Corridors" as paths for movement by connecting these protected forests in order to make the most of the functions of protected forests and to preserve forest ecosystems.

Because more information on "Green Corridors" must be gathered, a model "Green Corridor" should be constructed and data collected through monitoring, etc. should be reflected in planning "Green Corridors."

II. The idea of establishing "Green Corridors" in national forests

1. Basic idea for establishing "Green Corridor"

In establishing "Green Corridors," section 2 establishment standards must be followed in all national forests. The degree of importance and urgency of preserving forest ecosystems should be taken into full account, while considering the roles that existing forests must play and land use status in the surrounding regions. Decisions should be based on:

1) In view of the fact that protected forests are already designated to preserve wildlife and genetic resources, "Green Corridors" in principle should be established so as to link existing protected forests.

2) If existing protected forests need to be expanded or new protected forests need to be set, these issues must be included in the consideration of establishing "Green Corridors."

3) Outline the location and the target areas of "Green Corridors" by considering the distribution of wildlife and the arrangement of protected forests, consider the routes, and then establish "'Green Corridors" on a forest sub-block basis.

4) Gather opinions at a establishment committee consisting of officials from concerned local governments, persons with knowledge and experience, concerned agricultural or forestry farmers, environmental NGO staff, and representatives from concerned organizations to make informed decisions.

5) Evaluation of "Green Corridors" should be included in the regional administration and management plan and the national forest management operational plan.

2. Establishment standards

(1) Selection of a target area (outlining)

Outline the location and target areas for "Green Corridors" according to;

1) In principle, "Green Corridors" should be located in forests in backbone mountain ranges or major mountain ranges. Such forests should have forest ecosystems of proper scales and shapes so that they may be considered appropriate to be preserved.
2) In principle, "Green Corridors" should link protected forests continuously; however, they may take discontinuous forms, if necessary.

3) Do not establish "Green Corridors" in forests where competitive species like introduced species or predators that are not natural components of local ecosystems have invaded and may affect wildlife to be preserved.

4) In plant communities containing isolated and separated plant species, establish "Green Corridors" within the same plant communities if genetic exchanges seem to be necessary as a result of consideration of population sizes.

(2) Establishing routes

After outlining locations and target areas, set routes so that:

1) Establish "Green Corridors" by considering geographical conditions, the distribution of wildlife, and the arrangement of protected forests as well as forest coverage by category of function and the locations of monitoring fields and control fields.

2) Avoid complicated forms and use linear corridors to effectively link habitats.

3) Establish corridors in regions that are as remote from suburban forests as possible and take due care not to cause damage to agriculture and forestry.

4) Include as many places that are suitable for the movement, rest, and feeding of wild animals as possible.

(3) Breadth and length

Decide the breadth and length of "Green Corridors" by taking local situations into consideration and so that:

1) Except in cases where priority should be given to me indigenous or threatened species, animal species that are at the top of food chain should be the target species to preserve biodiversity in forest ecosystems, and the breadth and length of "Green Corridors" should be decided based on the standards shown in the attached table after considering the distribution and habitual characteristics of the target animals and land-use status.

2) If "Green Corridors" are short, the breadth has only to be wide enough to avoid edge effects. If 'Green Corridors" are long or segmented, consider provision of adequate breadth as required by installing nodes or the like in consideration of the habitual characteristics of the target animals.

3) If providing the adequate breadth is difficult for geographical reasons or because little information is available on rare, indigenous or threatened species with respect to deciding the proper breadth, consider providing a breadth wide enough to prevent disturbance from surrounding areas.

4) To facilitate genetic exchanges among plant communities, provide the breadth necessary for natural regeneration.

(4) Other considerations

Consider issues on existing legal rights so that;

1) Substands classified as loaned land of pastures and meadows should be excluded from land for "Green Corridors" and the existing rights should have priority.

2) Consider incorporating profit-sharing afforestation areas, profit-sharing silviculture areas, and common forest areas into land for "Green Corridors" by assuming the present right status.

III. The idea of "'Green Corridors" management in national forests

1. The basic idea of management

Because forests have diversified functions and "Green Corridors" serve as paths for the movement of wildlife between forest reserves rather than serving as a forest reserve, handling should involve careful consideration so that the functions of "Green Corridors" are put into effect irrespective of the categories of functions the forests have.

Because diversified forest ecosystems require diverse forests varying from strictly conserved forests to timber-producing forests, appropriate handling is required accordingly.

(1) For forest stands included in "Green Corridors," maintain and improve them according to several points in order to allow wildlife to pass through "Green Corridors" smoothly;

1) If the current condition of stands is satisfactory, appropriately maintain this condition.

2) If the stands require improvement, promote development of undergrowth and prevent denudation according to the current status of vegetation. Perform particular forest operations as required to form forests consisting of various tree species without bias for conifers or broad-leaved trees and to diversify forest ages and crown layers.

(2) Consider changing handling policies f the results from demonstration and monitoring require such changes.

2. Policies for managing green corridors

(1) Cutting

Cutting should comply with the following.

1) Give due consideration to cutting by avoiding reproduction seasons, etc. to conserve wildlife in forest stands designated as "Green Corridors."

2) In selective cutting areas, do not include such places that are likely to affect forest ecosystems as wildlife habitats, areas around nesting trees and forage trees, and wildlife migration paths.

3) In principle, employ selective cutting, shelterwood cutting, and multi-storied cutting to minimize the effects on forest ecosystems. If single storied forest silvicultural operations are employed and cutting periods ale extended, scale down and disperse the cutting blocks in consideration of the environment.

4) Set aside giant trees and old trees that provide caves, etc. to be used for nesting, foraging, and sheltering to conserve forest wildlife. Also set aside fallen trees, dying trees, and snags as long as they do not obstruct forest management including patrols.

5) Small-scale cutting should also be considered in order to secure forage sites.

(2) Regeneration and tending

Regeneration and tending should comply with the following.

1) Give due consideration to regeneration and tending by avoiding reproduction seasons, etc. to conserve wildlife in forest stands designated as green corridors.

2) Avoid uniform regeneration and adopt regeneration method and tree species by considering growth, distribution, and sprouting of advance growth and seedlings. Also consider planting forage trees.

3) Avoid uniform weeding and cleaning cutting and try to reserve invasion trees and undergrowth.

4) Cut climbing plants as required so they may not obstruct the growth of planted trees, but reserve forage plants such as wild grapevines and akebias in forage site.

5) In connecting plant communities, consider including single storied forest silvicultural operations and multi-storied forest silvicultural operations if forest stand situations require.

(3) Improvement of facilities

Improvement of facilities should comply with the following.

1) In constructing observational facilities and patrol bases, avoid places that are likely to affect forest ecosystems such as wildlife habitats, areas around nesting trees and forage trees, and wildlife migration paths. These facilities must be, appropriately maintained and managed.

2) The construction of road nets and sidewalks should not affect migration of wildlife. These facilities must be appropriately maintained and managed.

3) Although erosion control is indispensable, proceed with construction and improvement of erosion control facilities after due consideration of other public functions.

4) In planning facilities, give careful consideration from the start by consulting men of learning and experience, etc., as required, in order not to damage wildlife habitats. The facilities should be minimum sized.

(4) Management

The management of "Green Corridors" should comply with the following.

1) Patrols should try to understand the current status of life and growth of wildlife and the environment and to spread knowledge about nature to visitors.

2) Try to understand and monitor the actual status of wildlife, migration and causal relationships with forest operations by conducting aerial surveys from observatories and fixed point surveys. Consider enrolling -researchers and NGO staff in these surveys.

3) In monitoring, define the target animal species to study in each region and collect information on the life of other wildlife. Conduct controlled studies to collect demonstrative data on what forest operations should be.

4) Promote interactions with forests while conserving wildlife. After considering measures not to damage wildlife habitats, try to make the most of green corridors by using them as materials for forest environmental education and seriously consider putting up notice boards to improve understanding of people for green corridors.

5) Development of forest stands designated as "Green Corridors" and neighboring lands should be dealt with due care in view of the purposes of green corridors.

IV. Others

Besides the above, setting and handing of "Green Corridors" should comply with the following.

1) If green corridors are interrupted by private forests, try to seek understanding and cooperation of local governments and forest owners so that such green corridors may not lose their functions.

2) Give training to personnel in charge so that various activities conducted on green corridors may serve the purposes of green corddors.

3) Findings from green corridors in national forests should be offered to municipalities so as to be used in performing eco-friendly forest operations in private forests.

4) If there is a request that green corridors be open to public use and alterations of green corridors are needed, careful consideration must be given based on the purposes of green corridors.

5) Setting of green corridors should keep pace with environmental administration.

(Appendix)

The breadth and length of green corridors

Divisions	Rationale	Standards of breadth and length
If particular animal species is targeted	With mammals, calculation is based on female's home range since males are unlikely to settle in habitats and move across a wide area. Specifically, if female's home range is considered as a rectangle, the longest line represents the length and the breadth is given by dividing the area with the length.	
Umbrella species	In Japan, Japanese bears (Honshu, Shikoku, and Kyushu) and brown bears (Hokkaido) should be regarded as umbrella species based on the following reasons: (1) they are the biggest mammals, (2) they are distributed over both broad-leaved forests and mixed forests with coniferous and broad-leaved species, and (3) they have many companion species.	Breadth: 2 km Length: 20 km or less
If edge effect is considered	Assuming the edge effect to be 200 m in width and if a breadth of 100 m is required that is not affected by edge effect from both sides, the breadth is calculated to be 500 m.	Breadth: 500 m Length: -

Note 1: Umbrella species refers to an animal species that stands at the top of food chain in a certain ecosystem. Priority conservation of umbrella species leads to preservation of many other wildlife species because umbrella species are supported by food chains in forest ecosystems in their vast habitats comprising many kinds of wild animal and plants.

In addition to species listed above, large raptors like golden eagles and hawk eagles are sometimes included in umbrella species. The areas that human acts may affect the reproduction of these raptors are estimated to be 1.2 km and 0.5 km in radius with nesting sites at the center for golden eagles and hawk eagles respectively. If the length of green corridors is considered the average dispersion distance for a young individual, the value of the radius for moon bean will be about 40 km.

Note 2: Companion species refer to species that appear incidentally to the emergence of a particular species. Companion species for Japanese bears include antelopes, Japanese squirrels, flying squirrels, small Eurasian flying squirrels, and Japanese dormice, and those for brown bears include sables, chipmunks, and, although limited in distribution, ochotonahyperborea, and sorex spa.

Note 3: Edge effect refers to an influence of the outside environment on the inside environment of habitats that comes through transition zones that are located at the outermost of habitats and directly exposed to the entirely different outside environment. Changes in the insolation, wind force, moisture, and temperatures occur in these transition zones and microclimates and differences in soil conditions are produced.