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Shade-Grown Coffee Plantations in Northern Latin America: A Refuge for More than Just Birds & Biodiversity

*Denis A. O'Connell**

I.

AN INTRODUCTION TO SUSTAINABLE COFFEE

Historically, coffee in Northern Latin America¹ was planted in the shade beneath the canopy of native trees. Besides providing richer coffee and requiring little chemical fertilizers and pesticides, canopy trees also provide farmers with additional sources of food and income, and provide habitat for migratory songbirds and other species. More recently, a trend towards growing coffee under the full sun that began in the mid-1970s, driven in part by U.S. foreign assistance, has destroyed large tracts of coffee forests and their associated biodiversity.² This modernization of the coffee industry has allowed increasingly large volumes of coffee to be grown at faster rates. However, modernization has also resulted in reductions of vegetative cover and species diversity of plant communities and their associated faunas, and adverse envi-

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1. Northern Latin America consists of Mexico, Colombia, Central America, and many of the Caribbean nations. ROBERT A. RICE & JUSTIN R. WARD, NATURAL RESOURCES DEFENSE COUNCIL & SMITHSONIAN MIGRATORY BIRD CENTER, COFFEE, CONSERVATION, AND COMMERCE IN THE WESTERN HEMISPHERE 7 (1996).

2. David Bray, *Coffee that Eases the Conscience*, N.Y. TIMES, July 5, 1999, at A11.

ronmental impacts from the application of agrochemicals³ on lands previously unspoiled by such applications.⁴

Coffee consumers seeking to protect the flora, fauna, and small coffee growers that depend upon the traditional shade coffee plantation have been switching to certified coffee. The gourmet, or specialty, coffee industry has been subject to these social and environmental themes which were unimaginable a decade ago. As a result, organic, fair trade, bird-friendly, shade-grown, and the catchall sustainable coffees are now featured at coffee bars.⁵ Buying sustainable coffee has become a way for consumers to assist in conserving biodiversity and create an income for peasant farmers⁶

However, coffee consumers presently face the problem of too many different certification programs.⁷ The International Coffee Organization (ICO) should take a leadership role in the certified coffee market that will result in legitimate conservation of traditional shade-grown coffee farms. Such efforts by the ICO must be supported by non-governmental environmental organizations (NGOs) that must work in concert with the ICO for a common cause. Coffee companies must also support these initiatives by agreeing to purchase sufficient amounts of certified coffee to ensure that growing such coffee is economically profitable.

In addition to the ICO, NGOs, coffee companies, and their consumers, the governments of the coffee growing nations of Northern Latin America must take action to conserve shade-grown coffee farms. The Biological Diversity Convention called for its member states to "endeavor to provide conditions needed for compatibility between present uses and the conservation of biological diversity and the sustainable use of its components."⁸ Sound national policies that protect and conserve shade coffee

3. Agrochemicals are defined to include both synthetic substances used to control competition from other organisms (e.g. pesticides and herbicides), and substances to provide crops with the nutrients necessary to compensate for soil infertility (fertilizers). CONSERVATION INTERNATIONAL ET AL., CONSERVATION PRINCIPLES FOR COFFEE PRODUCTION 8 (2001).

4. Ivette Perfecto et al., *Shade Coffee: A Disappearing Refuge for Biodiversity*, *BIO SCIENCE*, Sept. 1996, at 607.

5. Bray, *supra* note 2, at A11.

6. *Id.*

7. The Organic Crop Improvement Association, Farm Verified Organic, Naturland, and the Demeter Association do organic certification. The Transfair social-justice label also guarantees growing members a guaranteed premium price. Mindy Pennybacker, *Habitat-Saving Habit*, *SIERRA*, March-April 1997, at 18.

8. Convention on Biological Diversity, Art. 8(i), U.N. Doc. DPI/130/7 (1992).

farms will not only benefit small farmers, the biodiversity that their plantations harbor, and the programs that certify their coffee as sustainable, but also will serve as a means for nations to achieve their *in situ* conservation duties under the Biological Diversity Convention,⁹ as well as the principles of Agenda 21.¹⁰

II.

THE ARRIVAL OF THE COFFEE BEAN IN THE NEW WORLD

Legend has it that coffee was discovered by an Ethiopian goat herder named Kaldi, who noticed that his goats were dancing and bleating excitedly after eating the red berries from a tree that he had never seen before.¹¹ Upon sampling the berries himself, Kaldi felt as if he were full of energy and was soon frolicking with his goats.¹² Whether this legend is true or not, coffee quickly spread to other countries from its original range in Ethiopia, and by about A.D. 1000 its popularity had soon spread throughout Arabia.¹³

Venetian merchants brought coffee from Constantinople to Italy in 1615, and by 1750 it could be found through most of Western Europe.¹⁴ By the eighteenth century, coffee had also been introduced into the fertile growing areas of the New World tropics.¹⁵ Under colonial rule, coffee cultivation increased dramatically throughout the tropics over the following centuries.¹⁶ Coffee is now grown in nearly eighty different tropical and subtropical countries.¹⁷

Coffee's popularity in the United States can be traced back to the Revolutionary War. Rebellious colonists, resisting British tea

9. Further discussion of the Convention on Biological Diversity occurs under Part V of this article.

10. U.N. Conference on Environment and Development, Agenda 21, para. 14.26(a), U.N. Doc. A/Conf.151/26 (1992). Agenda 21 is a comprehensive blueprint for sustainable development in the twenty-first century that was ratified at the Rio Earth Summit. Further discussion of Agenda 21 occurs under Part IX of this article.

11. MARK PENDERGRAST, *UNCOMMON GROUNDS: THE HISTORY OF COFFEE AND HOW IT TRANSFORMED OUR WORLD* 4 (1999).

12. *Id.*

13. Ethel A. Starbird, *The Bonanza Bean: Coffee*, NATIONAL GEOGRAPHIC, March 1981, at 394.

14. *Id.*

15. Lisa J. Petit, *Shade-Grown Coffee: It's for the Birds*, ENDANGERED SPECIES BULLETIN, July 1998 at 14.

16. GREGORY DICUM & NINA LUTTINGER, *THE COFFEE BOOK: ANATOMY OF AN INDUSTRY FROM CROP TO THE LAST DROP* 26 (1999).

17. *Id.* at 39.

taxes, dumped a load of tea into Boston's harbor and refused to buy any more tea from Tory sources.¹⁸ By the end of the Revolution, coffee had replaced tea as an American mainstay.¹⁹ Coffee has now become a national obsession.²⁰ Starbucks, a popular Seattle-based coffee house, has grown from eighty-four locations in 1990 to 4435 stores across America and twenty-one foreign countries.²¹ Americans consume approximately one-third of the world's coffee.²² According to the National Coffee Association, 52% of American adults drink coffee daily.²³

III.

THE BIOLOGY AND ECONOMICS OF COFFEE

Coffee is a woody shrub, and some species can grow thirty-two feet high given the proper conditions.²⁴ Coffee is a member of the genus *Coffea* in the family *Rubiaceae*.²⁵ Of more than twenty different species, two account for the majority of coffee consumed worldwide: *Coffea arabica* and *Coffea canephora* var. *robusta*.²⁶ Generally speaking, arabica is grown in Central and South America, and robusta is grown in West Africa and Southeast Asia.²⁷

Northern Latin America has the climatic and ecological conditions required for peak production of arabica coffee: rich soil, reliable rainfall, and ideal altitudes between 3000 and 6000 feet (900 and 1800 meters).²⁸ These ideal conditions also include plenty of sunshine, average temperatures between sixty and seventy degrees Fahrenheit, and freedom from frost.²⁹ By and large, arabicas are more susceptible to poor soils and diseases than robustas.³⁰ Because of this, and because they are considered a

18. *Id.* at 405.

19. *Id.*

20. Petit, *supra* note 15, at 14.

21. Patrick McMahon, 'Cause Coffees' Produce a Cup with an Agenda, USA TODAY, July 25, 2001, at A1.

22. Smithsonian Institution, *Why Migratory Birds are Crazy for Coffee* (modified Dec. 7, 2001), at <http://natzoo.si.edu/smbc/Products/Factsheets/fxsht1.htm>.

23. McMahon, *supra* note 21, at A1.

24. DICUM, *supra* note 16, at 39.

25. *Id.*

26. *Id.* at 40.

27. *Id.*

28. Starbird, *supra* note 13, at 396.

29. DICUM, *supra* note 16, at 39.

30. *Id.* at 43.

tastier bean than robustas, arabicas bring a higher price and are most often used in specialty coffees.³¹

Coffee plays an integral part in the world's economy.³² In dollar value, coffee trails only petroleum as the world's most important legal export, with revenues from coffee sales exceeding \$10 billion per year.³³ The annual yield of the three certified sustainable coffees (organic, fair-trade, and shade-grown) is roughly 36 million pounds and is valued at \$490 million.³⁴ Although substantial, sustainable coffee only represents less than 1% of global coffee sales.³⁵

Northern Latin American countries rely upon coffee as a key source of export income.³⁶ Mexico is the world's fourth largest coffee producer after Brazil, Colombia, and Indonesia.³⁷ Mexican coffee exports to the United States alone account for about one-third of the country's entire agricultural exports to the world.³⁸ In turn, coffee follows oil and steel as the third most common commodity imported into the United States.³⁹

IV.

THE DIFFERENCES BETWEEN TRADITIONAL, SHADE-GROWN COFFEE AND TECHNIFIED, SUN-GROWN COFFEE

Coffee is produced in many of the world's biologically richest regions, and contributes either to the endangerment or the protection of these regions depending upon how it is grown.⁴⁰ There are two fundamental ways to produce coffee: industrially in the sun, and traditionally in the shade.⁴¹ Throughout Northern Latin America and other parts of the world, coffee has traditionally

31. *Id.*

32. CONSERVATION INTERNATIONAL, *supra* note 3, at 1.

33. Smithsonian Institution, *supra* note 22.

34. Calculation includes certified organic \$223 million, plus 64% (non-organic portion) of \$393 million certified fair trade plus \$16 million certified shade-grown coffee. DANIELE GIOVANNUCCI, SUSTAINABLE COFFEE SURVEY OF THE NORTH AMERICAN SPECIALTY COFFEE INDUSTRY 25 (July 2001).

35. *Id.*

36. RICE & WARD, *supra* note 1, at 8.

37. Pennybacker, *supra* note 7, at 18.

38. Peter Costantini, *Coffee: Oaxaca's Life Blood*, at <http://www.msnbc.com/news/168688.asp?cp1=1> (last visited Feb. 20, 2004).

39. Smithsonian Institution, *supra* note 22.

40. CONSERVATION INTERNATIONAL, *supra* note 3, at 1.

41. SANTIAGO LOBEIRA, BIODIVERSITY IMPLICATIONS OF GROWING COFFEE IN THE SIERRA DE MANANTLAN'S BIOSPHERE RESERVE 5 (May 1999).

been planted in the shade beneath a canopy⁴² of native trees.⁴³ This method has been utilized because it causes coffee beans to mature more slowly, creating a higher sugar content than sun-grown coffee beans and giving them a richer, fuller flavor when they are roasted.⁴⁴

The canopy trees, also known as overstory or shade trees, play an important part in the ecology of the traditional coffee farm. Canopy trees fix nitrogen into the ground, resulting in fertile soil that requires little or no additional fertilizer.⁴⁵ Organic matter dropped from shade trees provides natural mulch, which in turn reduces erosion, inhibits weed growth, and prevents the accumulation of toxic metals in the soil.⁴⁶ The canopy trees protect the land beneath them from the impact of rain and wind.⁴⁷ Pesticides are unnecessary for growing shade coffee because the large number of birds that thrive in the overstory feast on any insects in the area.⁴⁸ The trees in the overstory can also provide additional food and insurance crops to small coffee growers, including timber, firewood, and fruit.⁴⁹

The switch from shade-growing techniques to a sun-grown coffee system is known as technification, or modernization. Growers originally modernized in the early 1970s to save their coffee plants from coffee leaf rust (*Hemileia vastatrix*), which thrives in moist conditions, because sun plantations generally have drier soil than their shaded counterparts.⁵⁰ However, coffee leaf rust never proved as destructive as anticipated.⁵¹ Presently, the major motivation behind modernization is increased production.⁵² Modernization employs a hybrid coffee plant that grows in full

42. Canopy is defined as the multiple stories of foliage in a stand of trees or shrubs, in particular the uppermost continuous layer of branches and foliage. CONSERVATION INTERNATIONAL, *supra* note 3, at 7.

43. David Templeton, *Hill of Beans: Environmental and Ethical Concerns Brew over Organic Coffee*, SONOMA COUNTY INDEP., Apr. 10-16, 1997, available at <http://metroactive.com/papers/sonoma/04.10.97/coffee-9715.html>.

44. *Id.*

45. *Id.*

46. Smithsonian Institution, *supra* note 22.

47. LOBEIRA, *supra* note 41, at 6.

48. Templeton, *supra* note 43.

49. Smithsonian Institution, *supra* note 22.

50. Tina Adler, *Coffee Can Give Many Species a Boost*, SCIENCE NEWS, August 31, 1996, at 132.

51. *Id.*

52. Perfecto, *supra* note 4, at 599.

sunlight and allows growers to produce coffee three times faster than the traditional method.⁵³

While sun-grown coffee cultivation produces substantial yields, intensive management is needed to sustain these increased yields over a number of years.⁵⁴ Soil nutrient levels decrease because there are no leguminous, nitrogen-fixing trees in the canopy to provide fertilizing leaf litter.⁵⁵ Because of the lack of nitrogen in the soil, sun-grown coffee requires a steady diet of additional fertilizers and chemicals.⁵⁶ Because of the absence of a leafy overstory, sun plantations do not have insect-eating birds, and therefore insecticides are needed to protect the ripening crop from insect pests.⁵⁷

Sun-grown coffee plants often suffer a premature death in environments with a marked dry season, and they need to be replaced much more frequently than plants in shaded areas.⁵⁸ Conversion to sun coffee appears to result in soil erosion and acidification, and increases the amount of toxic pesticides that are washed into streams.⁵⁹ Farmers that have converted from shade-grown to sun coffee find it hard to convert back to shade-grown methods because production yields usually fall when chemical fertilizer applications cease.⁶⁰ Changing back to shade coffee with organic fertilizers is risky and often unprofitable.⁶¹

The strict dichotomy between traditional versus modern, or shade versus sun coffee, is often complicated by hybrid conditions.⁶² In countries like El Salvador, much of the coffee is grown beneath a forest-like canopy.⁶³ At the ground level, though, high-yielding varieties of coffee, as well as agrochemicals, dominate the production process, often with a good shade canopy composed of only a single species.⁶⁴ When present in this industrial system, shade trees are subject to scientific pruning

53. Templeton, *supra* note 43.

54. Smithsonian Institution, *supra* note 22.

55. Petit, *supra* note 15, at 14.

56. Templeton, *supra* note 43.

57. *Id.*

58. Smithsonian Institution, *supra* note 22.

59. *Id.*

60. PAUL D. RICE & JENNIFER McLEAN, SUSTAINABLE COFFEE AT THE CROSSROADS 24 (1999).

61. *Id.*

62. RICE & WARD, *supra* note 1, at 12.

63. Robert A. Rice, *A Rich Brew from the Shade*, AMERICAS, March-April 1998, at 54.

64. *Id.* at 52.

techniques that produce a thin canopy, thus reducing the structural diversity of the canopy trees that might otherwise offer an array of niches to insects, birds, and other animals.⁶⁵

V.

MODERNIZATION LEADS TO DEFORESTATION, LOSS OF BIODIVERSITY, AND DESTRUCTION OF MIGRATORY SONGBIRD HABITAT

The coffee plantations of Northern Latin America are located in areas of high ecological value.⁶⁶ Traditional shade coffee plantations are highly valued because of their rich biodiversity, which includes a wide variety of plant, insect, animal, and bird species. Biodiversity was defined by the 1992 Rio Earth Summit as the variability among living organisms from all sources, including, *inter alia*, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems.⁶⁷ Only undisturbed rainforests provide habitat for a greater number of species than shade-grown coffee plantations.⁶⁸

The Biodiversity Convention was drafted prior to the Rio Earth Summit in an effort to initiate international action with respect to biodiversity.⁶⁹ Article Eight of the Convention imposes *in situ* conservation duties on ratifying parties, and calls for member nations to “regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use.”⁷⁰ The Convention also calls for the “protection of ecosystems, natural habitats and the main-

65. RICE & WARD, *supra* note 1, at 12.

66. Areas of high ecological value are defined as those areas that possess one or more of the following attributes: (1) areas containing globally, regionally, or nationally significant concentrations of biodiversity; (2) areas that are in or contain rare, threatened, or endangered ecosystems; (3) areas that provide basic services of nature (e.g. watershed protection or erosion control) in critical situations; (4) areas fundamental to meeting the basic needs of local communities (e.g. subsistence or health); (5) areas critical to local communities' traditional cultural identity (areas of significance identified in cooperation with such local communities). CONSERVATION INTERNATIONAL, *supra* note 3, at 7.

67. ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE, AND POLICY 907 (2000).

68. Pennybacker, *supra* note 7, at 18.

69. DAVID HUNTER ET AL., INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 933 (2002).

70. Convention on Biological Diversity, Art. 8(c), U.N. Doc. DPI/130/7 (1992).

tenance of viable populations of species in natural surroundings.”⁷¹ Because of their rich biodiversity, the protection and maintenance of shade coffee plantations can fulfill the *in situ* conservation duties for countries in Northern Latin America.

The importance of traditional shade plantations as a refuge for biodiversity may not lie mainly in the total acreage of land that they cover; shade plantations may be more important to biodiversity because of their location in areas that have been particularly hard hit by deforestation.⁷² Latin America and the Caribbean are home to seven of the ten countries with the world’s highest deforestation rates.⁷³ Eighty percent of Costa Rica’s original forests have already been destroyed.⁷⁴ In El Salvador, coffee plantations now account for about 60% of surviving forested areas.⁷⁵

In countries such as Costa Rica and El Salvador, where deforestation rates are high and coffee is still produced on shade plantations, these plantations also are likely to serve as critical habitat for forest biota.⁷⁶ They are often strategically located from an ecological standpoint, because they surround parks, form biological corridors connecting separate green areas, or stand alone as forested islands in an otherwise denuded landscape.⁷⁷

Technically, traditional shade plantations are not natural forests; they instead are referred to as artificial, or human-made, forests.⁷⁸ However, these artificial forests recreate the structure of natural forests because they have a high natural canopy with an understory of coffee plants.⁷⁹ This replication preserves biodiversity almost as well as a natural forest.⁸⁰ Ongoing biodiversity studies show that traditional coffee plantations are often critical refuges where there are no longer any natural forests, protecting species of insects, canopy trees, orchids, and amphibians.

71. Convention on Biological Diversity, Art. 8(d), U.N. Doc. DPI/130/7 (1992).

72. Perfecto, *supra* note 4, at 600.

73. These seven countries include Jamaica, Haiti, Costa Rica, Paraguay, Ecuador, Guatemala, and Mexico. RICE & WARD, *supra* note 1, at 16.

74. PENDERGRAS, *supra* note 11, at 400.

75. Pennybacker, *supra* note 7, at 18.

76. Perfecto, *supra* note 4, at 600.

77. Chris Wille, *Clouds in the Coffee*, 8 E/THE ENVIRONMENTAL MAGAZINE (Sept.-Oct. 1997), http://www.emagazine.com/september-october_1997/0997curr_coffee.html.

78. Rice, *supra* note 63, at 53.

79. Bray, *supra* note 2, at A11.

80. *Id.*

ans.⁸¹ In fact, studies have established that large numbers of insect species can be found in the canopy of a single tree on a traditional shade coffee farm.⁸² Insect diversity in Costa Rican shaded coffee plantations compares with that found in lowland rainforest areas.⁸³

In addition to diverse insect populations, traditional shade coffee plantations also host a diversity of plant species. Plant diversity results from two distinct shade-grown processes.⁸⁴ The more common of these processes is known as planted shade. The planted shade canopy is maintained through deliberate planting of species that provide small farmers with additional food or other crops that provide additional sources of income.⁸⁵ Planted shade plantations have substantially lower diversity than that of the canopy found on rustic plantation counterparts.⁸⁶

In rustic plantations, the second and rarer shade-grown process, coffee plants are planted in a manner where the forest is only cleared of its understory.⁸⁷ Rustic coffee includes coffee grown under old growth or secondary forests.⁸⁸ In secondary forests, the natural canopy's diversity is preserved in a modified form.⁸⁹ During periods when coffee brings low prices, rustic forests are often unweeded, enhancing biodiversity.⁹⁰ Over forty different tree species are commonly found on rustic coffee farms.⁹¹

Traditional coffee plantations have relatively high biodiversity because of the structural and floristic complexity of the shade trees.⁹² Greater canopy complexity results in a greater likelihood of a large array of organisms living within the canopy.⁹³ Large numbers of birds and bird species in traditional shade coffee plantations are associated primarily with the canopy trees.⁹⁴ In

81. Smithsonian Institution, *supra* note 22.

82. PENDERGRAST, *supra* note 11, at 401.

83. Smithsonian Institution, *supra* note 22.

84. Perfecto, *supra* note 4, at 601.

85. *Id.*

86. *Id.*

87. *Id.*

88. SMITHSONIAN NATIONAL ZOOLOGICAL PARK, SHADE MANAGEMENT CRITERIA FOR BIRD FRIENDLY® COFFEE 2 (2001).

89. Perfecto, *supra* note 4, at 601.

90. *Id.*

91. *Id.*

92. *Id.* at 598.

93. *Id.* at 601.

94. *Id.* at 604.

fact, less than 10% of birds sighted on shade coffee farms are found in the coffee plant understory.⁹⁵ Even in non-rustic settings, several commonly planted shade trees are natives that produce flowers that attract birds.⁹⁶

There are approximately 250 bird species that mainly breed in the temperate region of North America and winter in the tropics.⁹⁷ Many of these birds use canopy trees in shade coffee plantations as habitat. The nexus between songbirds and shade coffee plantations was first reported in the 1930s by American Museum of Natural History ornithologist Ludlow Griscom.⁹⁸ He noted that coffee growers retained much of the natural forest to shade their plants, and that birds and animals were little affected by the growth of coffee plantations.⁹⁹

More recently, Smithsonian Migratory Bird Center biologists have found that traditionally-managed coffee plantations support over 150 different bird species.¹⁰⁰ This number is exceeded only in undisturbed tropical forests, and is greater than that found in other types of agricultural farms.¹⁰¹ Sun coffee plantations are biological deserts by comparison, and do not function well as wildlife habitat.¹⁰² Even the most cursory of observations show sun plantations to be nearly devoid of birds.¹⁰³ Sun coffee plantations are home to 94-97% fewer bird species than shaded coffee farms.¹⁰⁴ Lands that served as wildlife habitats have become coffee factories hostile to biodiversity.¹⁰⁵

VI.

SOCIO-ECONOMIC EFFECTS OF THE COFFEE INDUSTRY ON INDIGENOUS PEOPLES

The shade coffee versus sun coffee debate has more at stake than the protection of habitat for birds.¹⁰⁶ Small coffee farmers

95. Smithsonian Institution, *supra* note 22.

96. Perfecto, *supra* note 4, at 602.

97. Wille, *supra* note 77.

98. *Id.*

99. *Id.*

100. Smithsonian Institution, *supra* note 22.

101. *Id.*

102. Petit, *supra* note 15, at 14.

103. Perfecto, *supra* note 4, at 604.

104. Donna A. Brunet, *Coffee & Birds: The Conservation Coffee Connection*, at <http://columbia-audubon.missouri.org/coffeebird.html> (updated March 25, 2000).

105. Rice, *supra* note 63, at 53.

106. Bray, *supra* note 2, at A11.

are also an endangered population.¹⁰⁷ Indigenous peasants currently grow the vast majority of Latin American coffee on tiny plots of land.¹⁰⁸ It is estimated that Northern Latin America is home to 700,000 small coffee producers.¹⁰⁹ In Mexico, which leads the world in supplying certified organic coffee,¹¹⁰ 90% of all coffee farms still occupy 12.5 acres or less.¹¹¹ Most small Mexican coffee farmers are indigenous peoples who earn less than \$1000 a year, and whose children frequently die of easily treatable diseases.¹¹²

Small sun coffee farmers who are totally dependent on coffee are at great risk economically.¹¹³ The traditional shade coffee farm sustains the grower better, because the farm produces income not just from the coffee harvest, but also from the harvest of additional non-coffee products produced by canopy trees.¹¹⁴ Thus, small shade coffee producers are protected from risks arising from nature, international coffee market fluctuations, and societal structures.¹¹⁵ Wood from natural and human prunings of canopy trees provides shade farmers a steady supply of fuel and, in the case of larger shade species, construction materials for homes and household furnishings.¹¹⁶ In addition, throughout Northern Latin America, it is common to find banana, citrus, or other fruit trees mixed in with coffee plants on shade plantations.¹¹⁷

However, small coffee farms owned by indigenous peoples are constantly being absorbed into larger sun-grown coffee plantations.¹¹⁸ The loss of smaller traditional shade coffee farms is proportional to the increase in the number and size of sun-grown coffee plantations. Of the 6.9 million acres planted with coffee in Northern Latin America, about 40% has been converted to sun

107. *Id.*

108. PENDERGRAST, *supra* note 11, at 4.

109. DICUM, *supra* note 16, at 38.

110. *Id.* at 173.

111. *Id.* at 174.

112. Bray, *supra* note 2, at A11.

113. Perfecto, *supra* note 4, at 605.

114. *Id.*

115. RICE & WARD, *supra* note 1, at 9.

116. Perfecto, *supra* note 4, at 605.

117. *Id.* at 601.

118. Pennybacker, *supra* note 7, at 18.

coffee.¹¹⁹ Sun-grown coffee now comprises 17% of Mexico's coffee crop, 40% of Costa Rica's, and 69% of Colombia's.¹²⁰

The production costs of sun-grown coffee are much higher than the production costs of shade-grown coffee because of the additional fertilizer, herbicides, and pesticides that are needed to produce sun-grown coffee.¹²¹ Due to these higher costs associated with sun-grown coffee, sun plantations are usually owned by the wealthy.¹²² The cost of production for a modernized coffee farm is approximately \$1740 per hectare, while coffee grown on a traditional shade farm costs approximately \$270 per hectare.¹²³ Thus, the cost of producing modern sun-grown coffee translates into \$1.24 per kilogram, while the cost of producing a kilogram of shade-grown coffee is \$0.85.¹²⁴

VII.

CERTIFICATION OF SUSTAINABLE COFFEE: ORGANIC, SHADE-GROWN, AND FAIR TRADE COFFEE

The sustainable development revolution that has energized efforts to save the world's tropical rain forests is currently sweeping through the coffee industry.¹²⁵ The Bruntland Commission has defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."¹²⁶ More specifically, the Biodiversity Convention defined sustainable use in relation to biological diversity as "the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations."¹²⁷ Not only does the Biodiversity Convention call for the development of national strategies to conserve biological diversity,¹²⁸ it also encourages "cooperation between its govern-

119. Petit, *supra* note 15, at 14.

120. Templeton, *supra* note 43.

121. Perfecto, *supra* note 4, at 599.

122. Petit, *supra* note 15, at 14.

123. Perfecto, *supra* note 4, at 599.

124. *Id.*

125. Templeton, *supra* note 43.

126. HUNTER, *supra* note 69, at 180.

127. Convention on Biological Diversity, Art. 2, U.N. Doc. DPI/130/7 (1992).

128. Convention on Biological Diversity, Art. 6(a), U.N. Doc. DPI/130/7 (1992).

mental authorities and its private sector in developing methods for sustainable use of biological resources.”¹²⁹

The term “sustainable” can be confusing in relation to the coffee industry, because it is often used as a catchall phrase to describe organic, shade-grown, and fair trade coffee.¹³⁰ Organic coffee is grown without the use of chemical pesticides, herbicides, or fungicides.¹³¹ Shade-grown coffee is grown in shaded forest settings that maintain biodiversity, control erosion, and preserve habitat for migratory birds.¹³² Fair trade coffee promotes small farm cooperatives, and guarantees a minimum contract price.¹³³ Although each of these coffees is distinctly defined, many of these categories actually overlap, which causes widespread confusion.¹³⁴ For example, fair trade coffee may or may not be organic, and organic coffee may or may not be shade grown.¹³⁵

Marketplace credibility is critical to the success of sustainable coffee certification.¹³⁶ Because sustainable coffees sell themselves on their non-physical attributes, consumers must be able to verify the claims of companies advertising their coffee products as organic, shade-grown, or fair trade.¹³⁷ Third-party certification is the most common way to ensure the credibility of these claims.¹³⁸ An independent agency inspects growers’ operations to determine whether or not they meet certain standards.¹³⁹ If standards are met, growers are allowed to market coffee under the agency’s certification label.¹⁴⁰

The Organic Crop Improvement Association (OCIA), the world’s largest independent organic certification organization, in 1995 claimed more than 2.5 million acres and 30,000 coffee grower members worldwide.¹⁴¹ OCIA charges a \$250 yearly membership fee, plus annual inspection costs.¹⁴² They also

129. Convention on Biological Diversity, Art. 10(e), U.N. Doc. DPI/130/7 (1992).

130. GIOVANNUCCI, *supra* note 34, at 8.

131. GREGORY GOUGH, ANSWERS TO FREQUENTLY ASKED QUESTIONS ABOUT BIRD FRIENDLY® COFFEE 1 (March 2001).

132. GIOVANNUCCI, *supra* note 34, at 8.

133. *Id.*

134. *Id.*

135. *Id.*

136. DICUM, *supra* note 16, at 174.

137. *Id.* at 175.

138. *Id.*

139. *Id.*

140. *Id.*

141. RICE & WARD, *supra* note 1, at 22.

142. DICUM, *supra* note 16, at 175.

charge a “privilege user fee” of 0.5% of the coffee’s sale price for the use of the organic-certified label.¹⁴³ Because an average coffee cooperative OCIA certifies might have 250 to 300 small-scale growers, the fees per farmer are not great.¹⁴⁴ For large co-ops, however, the privilege user fee often adds up to thousands of dollars annually, although this expense is balanced by the market premium certified organic coffee brings.¹⁴⁵

Some poorer small-scale coffee farmers have discovered that organic certification is easily obtained for their farm.¹⁴⁶ Farmers who were unable to afford agrochemicals in the past can obtain organic certification for their coffee crops very quickly because they do not have to wait for chemicals in their soil to disappear.¹⁴⁷ Certified organic coffee brings small growers significantly higher sales prices (often 10-15% above gourmet coffee with no organic trademark).¹⁴⁸

Small organic coffee growers routinely organize into local cooperatives affiliated with, and bound by the standards of, international certification programs.¹⁴⁹ The certification process often takes large amounts of time and money.¹⁵⁰ Certification can cost organic coffee co-ops thousands of dollars each year.¹⁵¹ Charges include expenses for the time and travel of field inspectors.¹⁵² For many small growers who are organic producers only because they cannot afford agrochemicals, such inspection costs prevent them from becoming certified and selling their coffee at higher prices.¹⁵³

In contrast to the organic coffee movement, the fair-trade movement believes that coffee producers in developing countries can achieve economic success if they receive fair prices for their product in international markets.¹⁵⁴ The movement is organized around the International Coffee Register, an entity owned by

143. *Id.*

144. *Id.* at 176.

145. *Id.*

146. Ellen Contreras Murphy, *Organic Coffee Growing in Mexico*, at <http://www.planeta.com/planeta/95/1195mexcof.html>.

147. *Id.*

148. RICE & WARD, *supra* note 1, at 22.

149. *Id.*

150. Perfecto, *supra* note 4, at 606.

151. RICE & WARD, *supra* note 1, at 22.

152. *Id.*

153. *Id.*

154. *Id.* at 23.

several fair trade groups.¹⁵⁵ Two hundred eighty-six coffee-growing cooperatives are members of the Register, representing about half a million growers worldwide.¹⁵⁶

Under current agreements, fair-trade growers are guaranteed \$1.26 per pound for ready-to-roast coffee.¹⁵⁷ This baseline price adequately covers production costs and provides a decent living wage for a coffee-growing family.¹⁵⁸ If world coffee prices average above \$1.26 per pound, growers receive \$0.05 per pound above the average world price.¹⁵⁹ The fair trade market also encourages farmers to obtain organic certification and sell their coffee with both certifications.¹⁶⁰ Fair trade farmers receive a price premium for certified organic coffee of \$0.15 above the market price.¹⁶¹

By focusing on cooperatives, the fair trade movement creates an incentive for small coffee farmers to organize.¹⁶² By organizing their own co-ops, farmers are taking a step toward community empowerment and equitable development by reducing the control of middlemen.¹⁶³ However, because the fair trade movement limits its focus to owners of small farmer co-ops, the often-dismal economic plight of farm workers on large coffee estates is virtually ignored.¹⁶⁴

VIII.

A PLETHORA OF SUSTAINABLE LABELS

At the present time, there is no single certification seal issued which covers organic, shade, and fair trade coffees, nor is there a single seal that enjoys extensive market support.¹⁶⁵ The proliferation of seals, initiatives, and brands lacks both a unified code of standards and a coordinated nationwide marketing effort.¹⁶⁶ Different organic coffee certifiers employ similar standards and procedures, but these standards and procedures are not universally

155. *Id.* at 24.

156. *Id.*

157. *Id.*

158. RICE & McLEAN, *supra* note 60, at 80.

159. RICE & WARD, *supra* note 1, at 24.

160. RICE & McLEAN, *supra* note 60, at 81.

161. *Id.*

162. *Id.* at 56.

163. *Id.*

164. *Id.*

165. *Id.* at 121.

166. *Id.* at 72.

applied.¹⁶⁷ For example, the Rainforest Alliance stamps organic coffee with its Eco-OK seal.¹⁶⁸ Eco-OK uses a less rigorous approach to agrochemical inputs instead of requiring full compliance with certified organic practices.¹⁶⁹ In addition, organic certifiers largely ignore issues pertaining to small-scale farmers, placing a greater emphasis on enlisting larger producers.¹⁷⁰

There is no consensus on certification standards and procedures for shade-grown coffee.¹⁷¹ Conservation International uses a different set of criteria in issuing its shade-grown seal.¹⁷² Similar to Eco-OK, Conservation International will certify farms that do not have a diversity of shade trees, but they do require improvement of shade after a farm has been included in their program.¹⁷³ While Conservation International's program does not accept all of the fair trade movement's tenets, they do propose certain progressive economic practices, including price guarantees that exceed production costs and credit access for small farmers.¹⁷⁴

Third-party certifiers such as Conservation International and the Rainforest Alliance are concerned about businesses developing certification programs that may enhance their brand's reputation, but cannot be proven to meet the standards of sustainable coffee.¹⁷⁵ Certifiers also want to maintain control of their own certification systems.¹⁷⁶ On the other hand, roasters and retailers of shade-grown coffee prefer to rely on their own reputations and credibility.¹⁷⁷ While Conservation International and the Rainforest Alliance could not reach a consensus on the criteria of their certification systems, the Thanksgiving Coffee Company created its own point verification system shade-grown brand.¹⁷⁸ Other organizations, including OCIA and Farm Verified Organic, are also independently certifying organic and/or shade-

167. *Id.* at 36.

168. PENDERGRAST, *supra* note 11, at 402.

169. RUSSELL GREENBERG, CRITERIA WORKING GROUP THOUGHT PAPER 4 (2001).

170. *Id.*

171. RICE & McLEAN, *supra* note 60, at 37.

172. PENDERGRAST, *supra* note 11, at 402.

173. GREENBERG, *supra* note 169, at 4.

174. *Id.*

175. RICE & McLEAN, *supra* note 60, at 37.

176. *Id.*

177. *Id.* at 78.

178. PENDERGRAST, *supra* note 11, at 402.

grown coffees in Northern Latin America.¹⁷⁹ European companies Naturland and Demeter have their own certification programs.¹⁸⁰ TransFair and Max Havelaar have concentrated on developing fair trade certification labels, and have not established criteria for organic or shade coffee.¹⁸¹

None of the organic, shade, or fair trade certification labels address all facets of sustainable coffee production.¹⁸² Organic certification labels are not concerned with shade management or the conservation of vegetated buffer zones¹⁸³ and forested areas (both of which are critical as migratory habitat).¹⁸⁴ And because fair trade certification targets small producers in cooperatives, they often overlook the concerns of farm labor on the larger plantations.¹⁸⁵

In addition to the problems created by a plethora of differing certification labels for sustainable coffee, and the fact that existing certification labels do not always address all recognized environmental and social concerns, there are also unscrupulous companies attempting to cash in on the sustainable coffee craze. Aware of sustainable coffee's growing popularity, some non-organic companies design their labels to appeal to conscious consumers.¹⁸⁶ Claims that coffee is shade-grown are becoming more common in the market place. These claims can be misleading, because some shade-grown coffee is produced under limited shade trees that are heavily pruned and do not provide habitat for birds or other wildlife.¹⁸⁷ Although there has been an increase in the number of shade coffee certification labels, no single label has gained widespread acceptance in the eyes of the American consumer.¹⁸⁸

179. DICUM, *supra* note 16, at 175.

180. RICE & WARD, *supra* note 1, at 22.

181. DICUM, *supra* note 16, at 175.

182. GREENBERG, *supra* note 169, at 4.

183. Buffer zones are defined as areas of forested land that reduce the impacts of adjacent activities on the critical area. CONSERVATION INTERNATIONAL, *supra* note 3, at 7.

184. GREENBERG, *supra* note 169, at 4.

185. *Id.*

186. DICUM, *supra* note 16, at 176.

187. *Id.*

188. *Id.*

IX.

ROLE OF THE INTERNATIONAL
COFFEE ORGANIZATION

The International Coffee Organization (ICO) is an intergovernmental body whose members are coffee exporting and importing countries.¹⁸⁹ The first International Coffee Agreement established the ICO in 1963.¹⁹⁰ The 1962 Agreement was negotiated in New York at a United Nations Conference, and the UN is still the Agreement's main authority.¹⁹¹ The new 2001 International Coffee Agreement is a successor to the original 1962 Agreement, and is administered by the ICO.¹⁹²

Under the Agreement, the ICO is committed to enhancing coffee growers' long-term competitiveness and contributing to the fight against poverty.¹⁹³ Member countries have recently ratified the 2001 Agreement, which states:

Members shall give due consideration to the sustainable management of coffee resources and processing, bearing in mind the principles and objectives on sustainable development contained in Agenda 21 agreed at the United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992.¹⁹⁴

Agenda 21 is an 800-page comprehensive blueprint for sustainable development in the twenty-first century.¹⁹⁵ Many of the principles espoused in Agenda 21 can be applied to the coffee industry. For example, one of the goals of Agenda 21 is to "improve farm productivity in a sustainable manner, as well as to increase diversification, efficiency, food security and rural incomes, while ensuring that risks to the ecosystem are minimized."¹⁹⁶ Agenda 21 also calls for protection of indigenous peoples' "values, traditional knowledge and resource management practices with a view to promoting environmentally sound and sustainable development."¹⁹⁷

189. International Coffee Organization, *About ICO: What We Do*, at <http://www.ico.org/frameset/icoset.htm>.

190. International Coffee Organization: *About ICO History*, at <http://www.ico.org/frameset/icoset.htm>.

191. *Id.*

192. *Id.*

193. International Coffee Organization, *supra* note 189.

194. International Coffee Organization, *International Coffee Agreement 2001*, Article 39: Sustainable Coffee Economy, <http://www.ico.org/frameset/icoset.htm>.

195. HUNTER, *supra* note 69, at 194.

196. U.N. Conference on Environment and Development, Agenda 21, para. 14.26(a), U.N. Doc. A/Conf.151/26 (1992).

197. *Id.* at para. 26.3(a)(iii).

In addition to administering the 2001 Agreement and its predecessors, the ICO hosted the International Seminar on Coffee and the Environment in 1996.¹⁹⁸ During this conference, a number of suggestions were made for international cooperation in the field of sustainable coffee production.¹⁹⁹ These suggestions included a call for general studies on sustainable coffee production, as well as studies on specific development projects to assist traditional shade coffee plantations.²⁰⁰ The ICO recommended simplifying organic certification and reducing its associated costs by forming certifying organizations in coffee-growing countries.²⁰¹ The ICO also encouraged studies on a sustainable coffee economy and common environmental standards for the industry.²⁰²

X.

ROLE OF THE COFFEE INDUSTRY

Four multinational companies dominate the coffee industry.²⁰³ Procter and Gamble, Philip Morris, Sara Lee, and Nestle sell 60% of U.S. and 40% of worldwide retail coffee sales.²⁰⁴ Starbucks has been the only large American coffee company to proclaim an interest in implementing a code of conduct for sourcing.²⁰⁵ In their mission statement, Starbucks avers to improve the quality of life for coffee harvesters and producers, and to purchase coffee from people with a commitment to improving their communities and work environments.²⁰⁶

In April 1999, Starbucks began to offer its customers organic coffee on a limited basis.²⁰⁷ A niche market is typically mainstreamed when a market leader enters the niche.²⁰⁸ By making the decision to sell organic coffee, Starbucks is proving to other large roasting companies that they cannot afford to continue ig-

198. Pablo Dubois, *Coffee and the Environment*, PLANETA, <http://www.planeta.com/planeta/96/0596coffee.html>.

199. *Id.*

200. *Id.*

201. *Id.*

202. International Coffee Organization, *supra* note 189.

203. Elizabeth Neuffer, *The Shadow of Globalization: The Coffee Connection*, BOSTON GLOBE, July 29, 2001, at A1.

204. *Id.*

205. RICE & MCLEAN, *supra* note 60, at 88.

206. *Id.* at 87.

207. *Id.* at 64.

208. *Id.*

noring the organic coffee market.²⁰⁹ These companies have reacted in a cool manner to the idea of implementing a code of conduct for sourcing.²¹⁰ However, many of the small and medium roasters should be credited for developing their own mission statements, internal codes of conduct, and guidelines for sourcing that address sustainability issues.²¹¹

XI.

CONCLUSION: ONE CERTIFICATION LABEL

Production of shade coffee as opposed to sun coffee can provide significant biodiversity conservation while continuing to be a significant and positive economic factor in Northern Latin America.²¹² Rarely do ecological, economic, and agricultural interests converge in harmony, as occurs in the case of shade-grown coffee.²¹³ Successful marketing of shade-grown coffee benefits growers, roasters, consumers, and also the birds and other flora and fauna that call traditional shade coffee plantations home.²¹⁴

An ecologically sustainable coffee industry in Northern Latin America can create a solid economic base for coffee farmers while providing protection for the environment.²¹⁵ However, the motivation for sustainable coffee production must come from morally-conscious coffee companies and educated consumers who insist upon coffee from growing and processing systems that protect biodiversity and improve economic conditions for poor farmers.²¹⁶

The average sustainable coffee drinker is well off, well educated, and friendly to environmental and human rights causes.²¹⁷ It makes common sense to combine the average sustainable coffee drinker with natural affinity groups such as bird watchers.²¹⁸ However, this natural audience has not yet significantly em-

209. *Id.*

210. *Id.* at 88.

211. *Id.*

212. Smithsonian Institution, *supra* note 22.

213. Scott Shalaway, *A Taste for Shade-Grown Coffee*, BIRDERS WORLD, June 1998, at 78.

214. Petit, *supra* note 15, at 14.

215. LOBEIRA, *supra* note 41, at 4.

216. RICE & WARD, *supra* note 1, at 21.

217. GIOVANNUCCI, *supra* note 34, at 30.

218. *Id.*

braced sustainable coffees.²¹⁹ Consumers wishing to purchase certified shade-grown coffee can do so, but only from an industry confused by different environmental and birding organizations providing differing levels of support, ideas, and input.²²⁰ International NGOs will become more valuable for their financial and technical assistance in sustainable coffee production, but these organizations should combine their individual efforts.²²¹

There is an enormous gap between what the sustainable coffee market could potentially provide for the world, and what the world coffee market actually provides.²²² The main problem with sustainable coffee is that certifiers and roasters cannot agree on criteria for certification.²²³ In order to increase consumer awareness and boost sales of certified coffee, there should be a consolidation of certification labels. In a recent survey, over 66% of the coffee industry said that it was important to have an all-inclusive "super seal" which combined most criteria of sustainable coffee growing.²²⁴ This "super seal" should encompass organics, shade, and fair trade while addressing the shortfalls of existing labels, such as the lack of concern for farm labor on larger plantations.²²⁵ Third-party certification would help promote accuracy in labeling and further educate the marketplace with consistent and common terminology.²²⁶ Under an all-inclusive "super seal," the consumer message would be simpler, and promotional resources could be combined and targeted.²²⁷

Significant efforts should be made to broaden the issues that organic certification addresses.²²⁸ Organic inspectors should be trained to recognize different tree species and basic vegetation structure so they can certify for shade while conducting their or-

219. *Id.*

220. The American Birding Association sells the Songbird brand in conjunction with the Thanksgiving Coffee Company. The Wild Bird Centers of America offer the Sanctuary brand in conjunction with Counter-Culture Coffee. The National Audubon Society and the Smithsonian Migratory Bird Center help to support the Café Audubon brand, created by the Eco-Organic Coffee Company. The Rainforest Alliance sells Eco-OK coffee, while Conservation International sponsors E-Coffee. PENDERGRAST, *supra* note 11, at 403 n.4.

221. RICE & WARD, *supra* note 1, at 27.

222. CONSERVATION INTERNATIONAL, *supra* note 3, at 1.

223. RICE & MCLEAN, *supra* note 60, at 123.

224. GIOVANNUCCI, *supra* note 34, at 21.

225. RICE & MCLEAN, *supra* note 60, at 108.

226. *Id.* at 29.

227. *Id.* at 107.

228. GREENBERG, *supra* note 169, at 4.

ganic inspections.²²⁹ When shade and organic certifications are combined, these coffees can be promoted in larger potential markets where consumers are concerned with issues such as the conservation of migratory bird habitat.²³⁰ The new certification label should be based upon a graded system to include more farmers while offering them additional compensation as they practice more sustainable agriculture.²³¹

The Biodiversity Convention directs parties to “respect, preserve, and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity.”²³² Meeting this goal will require significant action by the national governments of the countries of Northern Latin America. These governments must establish sensible policies that preserve shade coffee production, and allow small coffee growers to benefit from the responsible agriculture that many already practice out of necessity.²³³ Such actions will help maintain the biodiversity found in shade coffee farms, and will also reap larger economic benefits for the coffee growers’ communities.²³⁴ They will also further the biodiversity conservation policies of the Biological Diversity Convention and help to achieve the goals of Agenda 21.

229. RICE & McLEAN, *supra* note 60, at 76

230. GREENBERG, *supra* note 169, at 4.

231. *Id.*

232. Convention on Biological Diversity, Art. 8(j), U.N. Doc. DPI/130/7 (1992).

233. RICE & WARD, *supra* note 1, at 26.

234. *Id.*

