

THE ECOLOGICAL PERSPECTIVE OF
HENRY DAVID THOREAU

by

Henri Gilbert Garand

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A P P R O V A L

Name: Henri G. Garand

Degree: Master of Arts

Title of Thesis: The Ecological Perspective of Henry Thoreau

Examining Committee:

Chairman: Professor G.M. Newman

(S.A. Black)
Senior Supervisor

(R. Blaser)
Examining Committee

(A. Turnbull)
Examining Committee

(B. Sylvester)
External Examiner
Associate Professor
Department of English
University of British Columbia
Vancouver, B.C.

Date Approved:

30 November 78

ABSTRACT

This thesis traces the growth of Thoreau's ecological perspective from the early 1840's, when Thoreau dilutes his ecology with his penchant for symbolization and philosophical meditation, to the early 1860's, when he produces sound, if elementary, ecological studies. Dealing only with those writings Thoreau prepared for publication, and not his Journal, the thesis identifies three phases in Thoreau's literary career.

In the 1840's, influenced by the transcendental concepts of organic unity and idealism, Thoreau often makes simple ecologic observations, such as noting food chains, in his essays, but he undercuts their significance by transforming them immediately into philosophic and literary symbols. He is intent upon making natural facts flower into spiritual truths. This aim and his method are evident in "The Natural History of Massachusetts," "A Walk to Wachusett," "A Winter Walk," and finally A Week on the Concord and Merrimack Rivers.

Only Walden, a product of both the 1840's and '50's, achieves a balance, a synthesis of vision, between Thoreau's ecological and idealistic perspectives. In Walden Thoreau simultaneously gives a literal account of man's relation to nature and a symbolic account of the means of spiritual renewal. Without slighting either subject, the book is at once a study of both human ecology and transcendental regeneration.

Most of Thoreau's other writings in the 1850's, however, reflect exclusively his increasing absorption in the world of nature. Cape Cod, "Chesuncook," "Wild Apples," and ultimately "The Succession of Forest Trees" evidence his application of an ecological perspective to a particular place, organism, or natural process. Occasionally he lapses, as with "Autumnal Tints," into his tendency for symbolization, but mostly these writings consistently focus upon the relationship of organism (especially man) and environment.

While not maintaining that Thoreau is preeminently an ecologist, this thesis does insist that he looks at nature as an intricately interrelated system and that such an ecological viewpoint forms the substance of his later works.

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Henri Gilbert Garand

Introduction: The Ecological Perspective

Ecology has recently become fashionable, so any new literary study involving the subject is rightly suspect. But the present thesis has a firmer basis than fashionableness. Nearly thirty years ago, Edward Deevey, a biologist, first presented the argument that many of Henry David Thoreau's observations of nature fell within the realm of what is called ecology.¹ The results of this line of thought were several articles and an unpublished thesis seeking to assess the level of Thoreau's ecological awareness.² All these earlier studies were scientifically oriented: they sought to prove that if Thoreau was a scientist of any kind he was an ecologist; they did not consider ecology in relation to Thoreau's writing except to observe that it was contradictory to his poetic strivings. Because ecology is not only a science but also a mode of perception, however, Thoreau's own ecological perceptivity affects his literary treatment

¹Edward S. Deevey, "A Re-examination of Thoreau's Walden," Quarterly Review of Biology, 17 (1942), 1-11.

²Raymond Adams, "Thoreau's Science," Scientific Monthly, 60 (1945), 379-82; Lee Marten Nash, "Ecology in the Writings of Henry David Thoreau," M.A. Thesis Univ. of Washington 1951; Kathryn Whitford, "Thoreau and the Woodlots of Concord," New England Quarterly, 23 (1950), 291-306; Philip and Kathryn Whitford, "Thoreau: Pioneer Ecologist and Conservationist," Scientific Monthly, 73 (1951), rpt. in Walter Harding, ed., Thoreau: A Century of Criticism, (Dallas: Southern Methodist Univ. Press, 1954), pp. 291-96.

of nature. His ecologic observations grow both quantitatively, as other critics have noted, and qualitatively. From individual ecologic observations, his chief interest in which is as a basis for transcendental correspondences, Thoreau moves to complete books, like Walden and Cape Cod, informed by an ecological perspective.

But what constitutes an ecological perspective?

Eugene Odum defines the science of ecology as "the study of the structure and function of nature."³ Thoreau's approach to nature, however, is less deliberate and profound than that implied by Odum's definition. Consequently, Paul Shepard offers a more appropriate, though less scientific, explanation of what an ecological perspective consists:

Ecology deals with organisms in an environment and with processes that link organism and place. But ecology as such cannot be studied, only organisms, earth, air, and sea can be studied. It is not a discipline: there is no body of thought and technique which frames an ecology of man. It must be therefore a scope or way of seeing. Such a perspective on the human situation is very old and has been a part of philosophy for thousands of years.⁴

³Eugene P. and Howard T. Odum, Fundamentals of Ecology, 2nd. ed. (Philadelphia and London: W. B. Saunders, 1959), p. 4. This is the textbook upon which I have relied for a basic knowledge of ecology.

⁴Paul Shepard, "Introduction: Ecology and Man--A Viewpoint," in The Subversive Science: Essays Toward an Ecology of Man, ed. Paul Shepard and Daniel McKinley (Boston: Houghton Mifflin, 1969), p. 1 (Shepard's italics).

Such an outlook comes increasingly to distinguish Thoreau's nature writing. Proceeding from transcendental intuitions about the unity of nature, later sharpened by his scientific knowledge, Thoreau fashions a perspective or way of seeing that interrelates organisms and their surroundings. As the years pass, he becomes acutely conscious of relationships in nature. This ecological perspective is present in many of Thoreau's public writings (those nature essays and books that were delivered as lectures and/or published during his lifetime) as well as in his Journal. In the latter, perhaps, Thoreau approaches nearest to the science of ecology. He repeatedly notes plant and animal habitats, food relationships, environmental factors affecting plant growth, means of seed distribution and forest succession, and man's abuse of nature.⁵ Sometimes he even uses an objective method to study an ecological question, much as a modern ecologist would. For instance, he determines the density of the clam population in Fair Haven Bay in order to estimate the available food supply for muskrats.⁶ In Thoreau's public writings (upon which the present study will focus), however, the quality of his separate ecologic

⁵Nash, pp. 12-65, gives a thorough discussion of Thoreau's plant and animal ecology, both its scope and scientific standard.

⁶Henry D. Thoreau, The Journal, ed. Bradford Torrey and Francis Allen (New York and Boston: Houghton Mifflin, 1906), IV, 178.

perceptions is less significant than his overall way of looking at nature. Pervading his later works is an abiding sense of the web of life, of the links and stresses between organisms and environment. While Laurence Stapleton intends a meaning of perceptual relation, his words can well describe Thoreau's ecological perspective: his "business was with relatedness: of lichen to rock, distintegrated rock to soil, soil to tree, tree to sky, and himself, a man, to each of these in each phase of change."⁷

The subject of this thesis, then, is the development and the results of an ecological perspective in Thoreau's public writings. It will consist less of evaluating the level of his ecologic understanding than of probing the literary effect of his perspective. Interestingly, the subject involves not only Thoreau's science but also his transcendentalism.

During the late 1830's and early 1840's Thoreau imbibed the philosophy of transcendentalism from his mentor, Emerson.⁸ Understandably, then, in its treatment of nature Thoreau's first writings are dominated by a tendency to Emersonian speculation. Only with the cooling of their friendship did Thoreau assert his own less abstract, ecological approach to

⁷ Laurence Stapleton, "Introduction," in H. D. Thoreau, A Writer's Journal, ed. L. Stapleton (London: Heineman, 1961), p. xvi.

⁸ Walter Harding, The Days of Henry Thoreau (New York: Alfred Knopf, 1965), pp. 61-63. Though I have consulted other biographies, Harding's is my primary source for biographical facts.

nature.⁹ Yet, paradoxically, Thoreau's ecology developed out of, as well as was impeded by, his transcendentalism. As Emerson theorized in Nature (1836), transcendentalism stressed both the unity of nature and an idealistic view of the world. The first idea, that of organic unity, was amenable to an ecological perspective because it encouraged the systematic search for relationships among animals, plants, and their environment, rather than the random collection of fragmentary data about natural history. Transcendental idealism, however, with its insistence upon a symbolic view of nature, undermined the basic materialism of any consistent biological view of the world. Leo Stoller explains Thoreau's dilemma accordingly:

It was a characteristic of transcendentalism, and especially of young Thoreau's variety, that it attempted to close the gap between the nature usually sought through mysticism and the nature usually studied by science. The doctrine of correspondence, which held that the physical and biological facts of nature were symbols of the spiritual and moral facts of deity, was an expression of the essential unity of the transcendental cosmos. All was oversoul in varying forms. All moved in accordance with identical laws, expressed in parallel in the moral and physical orders

The view of nature as mere symbol did not, however, wholly satisfy Thoreau, who wished, in the very glimpsing of the spiritual, to retain firm hold on the material.¹⁰

⁹Both Stapleton, p. xvi-xvii, and George Whicher, Walden Revisited, a Centennial Tribute to Henry David Thoreau (Chicago: Packard, 1945), p. 78, point out Thoreau's more concrete treatment of nature and his less frequent leaping from natural objects to immediate philosophic observation.

¹⁰Leo Stoller, After Walden: Thoreau's Changing Views on Economic Man (Stanford, Calif.: Stanford Univ. Press, 1957), pp. 40-41.

Thus Thoreau was torn between the twin impulses toward ecology and toward idealism. This conflict of interest appears prevalently in "The Natural History of Massachusetts," "A Walk to Wachusett," "A Winter Walk," and A Week on the Concord and Merrimack Rivers.

In the 1850's transcendentalism diminishes as a developing (and/or retarding) force on Thoreau's ecological perspective as his interest in science grows. Despite lamentations about his increasing divorcement from poetry and philosophy, during these years he became more and more a field naturalist. Distrustful of the science of his own day for amassing aimless facts, Thoreau sought functional relationships in nature. The results are fairly impressive, as Mary Sherwood points out in discussing Thoreau's nature studies as well as the limitations under which he worked:

Today he is considered the father of limnology for his detailed notes on stream and lake biology and physics. He is recognized as the first to work out plant succession through his study of pine trees--a concept which present day botanists, ecologists and wildlife managers could not do without. . . . Thoreau is considered our first real ecologist, and he was also one of the first, if not the first, phenologist in the country. None of these sciences, except botany, was in existence then; he helped lay their foundations. He was such a meticulous worker that his notes have considerable value despite the fact that we now consider several machines and gadgets essential for accurate observation. In many

cases his data are all that we have for his time, so we are fortunate in the quality of his work.¹¹

Not surprisingly, Thoreau's acute consciousness and broadened knowledge of fundamental ecologic relations, in particular food chains and environmental stresses on organisms, are apparent in Cape Cod, "Chesuncook," "Wild Apples," and, naturally, "The Succession of Forest Trees." All these works show Thoreau's scientific bent as the expanding force on his ecological perspective. In these essays and books Thoreau explores the complexity of nature and yet gives thematic unity to his observations by focusing on the interaction of organisms and environment. And he is either not at all or but peripherally concerned with drawing any spiritual correspondences out of his ecologic perceptions.

¹¹ Mary P. Sherwood, "Fanny Eckstorm's Bias," in Thoreau in Our Season, ed. John H. Hicks (Univ. of Massachusetts Press, 1966), p. 64.

Although Thoreau undoubtedly pioneered in many fields of biology, a puzzle exists in regard to his familiarity with ecology. In a letter, dated Jan. 1, 1858, to his cousin George Thatcher, Thoreau refers to "attending to Botany, Ecology, &c." (The Correspondence of Henry David Thoreau, ed. Walter Harding and Carl Bode [New York: New York Univ. Press, 1958], p. 502.) Paul Oehser has pointed out, however, that Thoreau's use of the term "ecology" antedates its supposed coining by Ernst Haeckel in 1866 (Paul Oehser, "The Word 'Ecology,'" Science, 17 April 1959, p. 992.). Since the context of Thoreau's letter does not suggest he coined the word, when was it coined? did the word have the same meaning as at present? and how well developed was the system of ideas it represented? As all these questions presently are unanswerable, I have not taken into account the formative effect of any established ecological thought upon Thoreau's own perspective. Instead, I have tried to explain Thoreau's developing ecology with the biographical facts at hand.

Indeed, only in Walden does Thoreau successfully synthesize his ecologic and transcendental visions. Perhaps because Walden originated in the period 1845-47, when Thoreau was still immersed in the aura of transcendentalism, and yet was only completed in 1854, by which time he was well into his scientific studies, the book manages to balance these two ways of looking at nature.¹² The result is a work that brilliantly couples the ecologic intricacies of life with the symbolic depth of spiritual meanings.

This, then, is Thoreau's ecological perspective, a way of looking at nature that develops from cursory perceptions to a consistent view of organisms and their environment, which pervades his later public writings. The consequences of its growth are a decline in Thoreau's symbolic tendencies and a focusing upon ecologic situations. Whatever its ultimate literary merit, Thoreau's ecological perspective has left a distinct imprint on his writing.

¹²Cf. William W. Nichols, "Science and the Art of Walden: Experiment and Structure," Emerson Society Quarterly, 50 (Supplement, 1968), pp. 77-84, who argues that the idea of experiment and the quality of scientific objectivity are structural principles in Walden.

Chapter I--The Philosophic Vein

Henry Thoreau's early writings about nature reflect the divergence between his attraction to the material world and his penchant for transcendental philosophizing. This divergence, as was previously stated, is rooted in transcendentalism itself, with its simultaneous affirmation of organic unity and preference for a symbolic view of the world. The first aspect fostered Thoreau's ecological perspective; the second fostered his transforming ecologic facts into symbolic (or spiritual) truths. Thoreau's conflict of interest is readily apparent in the 1840's throughout his nature writings.

Thoreau's first nature essay, "The Natural History of Massachusetts," which appeared in the Dial in July, 1842, shows how pervasive is his perceptual conflict. Ostensibly reviewing a series of reports on the flora and fauna of the state, the essay is actually both a celebration of nature and an inquiry into man's perception of nature. The whole essay balances between the reporting of natural history data and the attempt to find transcendent meaning in that data.

Of the factual material, a part is ecological. Thoreau notes some foods of snowbirds--garden seeds,¹ of river ducks--lily roots and cranberries (V, 110), of ospreys--fish

¹ Henry David Thoreau, The Writings of Henry David Thoreau, ed. Bradford Torrey and Francis Allen (Boston and New York: Houghton Mifflin, 1906), V, 109. Hereafter references to the Writings will be identified by volume and page number within the text of my thesis.

(V, 110), of muskrats--"flags and fresh-water mussels" (v, 116), and of skunks--turtle eggs (V, 124). He notes the habitats of nuthatches and chickadees--woodland (V, 108), of song sparrows--shrubbery and fence rows (V, 110), of bitterns--fens (V, 111), and of muskrats--river banks (V, 116). He notes the effect of the transparency and current of the water on the diversity and abundance of the animal species that a river supports: the Concord's "current being much more sluggish and its water more muddy than the rest, it abounds more in fish and game of every kind" (V, 115). With regard to man and nature, he notes the importance of the common mussel in the Indian's diet (V, 129), the white man's elimination of the more wild quadrupeds with the advance of his settlement (V, 117), and, of course, the beneficial psychological effect of communion with nature (V, 105-106). But all these observations are made only in passing, as Thoreau surveys the insects, birds, mammals, fishes, reptiles, amphibians, and plants of Massachusetts. Moreover, Thoreau's observations throughout the essay are often just as elementarily morphological or ethological as they are ecologic. The nature writing in the essay is a compendium of typical nineteenth-century natural history, woodcraft and fishing lore, and nature appreciation.

The thrust of the essay, however, as several examples will illustrate, is philosophical. Thoreau may quote from the state reports that Cape Cod is a topographic barrier to the dispersal of molluscs and confines many species to either the north or south of the Cape, but his interest in this ecological

information is simply that it "teaches us to put a new value on time and space" (V, 129). Thoreau's concern with biology, then, is chiefly that it can illuminate broad philosophical or even experiential issues. Indeed, he seems to approach scientific questions with a philosophic mind. Instead of searching for an adequate explanation of mimicry in nature, for example, Thoreau attributes it to some cosmic law of growth: "The same independence of law on matter is observable in many other instances [he has been discussing the visual similarity of ice crystals to foliage], as in the natural rhymes, when some animal form, color, or odor has its counterpart in some vegetable" (V, 127). Clearly Thoreau's veneration of natural law is related to Emerson's contention that "A rule of one art, or a law of one organization, holds true throughout nature."² Eager to find such order in nature, Thoreau too readily accepts transcendental "explanations" for unusual natural phenomena.

That Thoreau is mainly interested in ordering his universe is evident from the conclusion to "The Natural History of Massachusetts." Although he has deluged the reader with miscellaneous biological data, he now maintains that such measurements and descriptions as the state reports contain are valuable not as ends in themselves but as the basis for some synthesis: "Let us not underrate the value of a fact;

² R. W. Emerson, The Complete Works, ed. Edward Waldo Emerson (Boston and New York: Houghton Mifflin, 1903), I, 44.

it will one day flower in a truth" (V, 130). Whether this synthesis or "truth" would be scientific or philosophical, however, was Thoreau's eternal dilemma;³ it all depended on whether his attitude at the time was predominantly materialistic or idealistic.

In "The Natural History of Massachusetts" Thoreau wants to combine both outlooks. He praises science for its striving after knowledge: "Science is always brave, for to know is to know good" (V, 107). However, he also states that "Nature is mythical and mystical always . . ." (V, 125). But clearly a scientific approach is inapplicable for understanding something mythic and mystic. Thoreau, then, seems to be denying the validity of a rational study of nature, or at least he is maintaining that certain properties of nature are inaccessible to such study. His position is made somewhat clearer at the conclusion of the essay:

Wisdom does not inspect, but behold. We must look a long time before we can see. Slow are the beginnings of philosophy. He has something demon-

³Granted that Thoreau was predisposed to synthesize his observations either scientifically or philosophically, why should his scientific syntheses be ecological? An example will perhaps clarify the matter. Thoreau consistently noted what animals ate and how abundant certain foods were for them. His interest was thus rudimentarily ecological in that he was aware the survival of an animal population was dependent on the extent of its food supply. He did not speculate upon how the food was digested or how certain foods affected animal growth. By confining himself usually to a macroscopic investigation of live specimens in the wild, Thoreau virtually had to observe functional relationships between animals, plants, and their environment if he was to do anything more than collect isolated data about each species. In order to synthesize his observations on any but a transcendental level, that is, he had to think ecologically.

iacal in him, who can discern a law or couple two facts. . . . The true man of science will know nature better by his finer organization; he will smell, taste, see, hear, feel, better than other men. His will be a deeper and finer experience. We do not learn by inference and deduction and the application of mathematics to philosophy, but by direct intercourse and sympathy. It is with science as with ethics,-- we cannot know truth by contrivance and method; the Baconian is as false as any other, and with all the helps of machinery and the arts, the most scientific will still be the healthiest and friendliest man, and possess a more perfect Indian wisdom.⁴ (V, 131)

Ultimate synthesis and understanding of nature, Thoreau thus believes, is possible solely through intuitive comprehension. Yet somehow sensory, and thus material, contact with nature is the foundation for this intuitive comprehension. By stressing the necessity of physically experiencing nature in order to arrive at "wisdom," Thoreau attempts to unite his materialistic and idealistic visions. He wants to see the world as actuality and symbol; he wants the capability to "discern a law" in nature and to achieve psychological integration with nature. Certainly he yearns to perceive system in nature, and it is this yearning that drives him, on the scientific level, despite his derogations of both inductive and deductive reasoning, to an ecological perspective.

⁴By "Indian wisdom" Thoreau may have been referring to either the Hindu or the Amerind. In his Journal for 1840-41 (Consciousness in Concord, ed. Perry Miller [Boston: Houghton Mifflin, 1958], p. 71), in which this passage originally occurs, it follows several references to Bedouins, so Thoreau may have been in an Eastern frame of mind. In any case, Thoreau knew both the Hindu and the American Indian practiced an intuitive mode of thought.

For the time being, however, transcendentalism so satisfied Thoreau that he incorporated his ecological insights within his philosophizing. "A Walk To Wachusett," first published in The Boston Miscellany in January, 1843, is a case in point. The essay recounts a three-day journey to, ascent of, view from, and return from, Mt. Wachusett. Its transcendental burden is that Thoreau and his companion are revitalized by the grand prospect they see from the top of Wachusett, and, as Sherman Paul states, "Having once had this inspiration, the plainsmen need not despair. He can live in the view, if not on the summit, of the mountain."⁵ But Thoreau's application of the transcendental doctrine of correspondence is what chiefly interests us here:

We could at length realize the place mountains occupy on the land, and how they came into the general scheme of the universe. When first we climb their summits and observe their lesser irregularities, we do not give credit to the comprehensive intelligence which shaped them; but when afterward we behold their outlines in the horizon, we confess that the hand which moulded their opposite slopes, making one to balance the other, worked round a deep centre, and was privy to the plan of the universe. So is the least part of nature in its bearings referred to all space. These lesser mountain ranges, as well as the Alleghanies, run from northeast to southwest, and parallel with these mountain streams are the more fluent rivers, answering to the general direction of the coast, the bank of the great ocean stream itself. Even the clouds, with their thin bars, fall into the same direction by preference, and such even is the course of the prevailing winds, and the migration of men and birds. A mountain chain determines many things for the statesman and

⁵ Sherman Paul, The Shores of America (Urbana, Ill.: Univ. of Illinois Press, 1958), p. 165.

philosopher. The improvements of civilization rather creep along its sides than cross its summit. How often is it a barrier to prejudice and fanaticism! In passing over these heights of land, through their thin atmosphere, the follies of the plain are refined and purified; and as many species of plants do not scale their summits, so many species of folly, no doubt, do not cross the Alleghanies; it is only the hardy mountain-plant that creeps quite over the ridge, and descends into the valley beyond. (V, 148)

Thoreau seems determined to "discern a law" of the world and to glimpse spiritual truth in the natural order. He struggles to see harmony in nature, especially in the physiography of the land. He is ecologically correct in noting how mountains act as topographic barriers to the population dispersal of both man and plants and in noting that the growth of plant species is related to altitude. The impetus to observe such interrelations in nature is of course transcendental. The passage thus shows the level of ecological perceptivity of which Thoreau is capable with such a stimulus, but it also shows how transcendentalism ultimately governs Thoreau's thinking. The ecologic information is finally used just as an appropriate example for illustrating his philosophical comments on human character and society. Under the pressure of the doctrine of correspondence Thoreau makes each natural fact yield its spiritual counterpart. His ecological perspective arises from and perishes by his overriding transcendentalism.

A less effective example of this, perhaps, is the description of the woodland lake in "A Winter Walk," Thoreau's third nature essay, originally published in the October, 1843,

Dial:

In summer it is the earth's liquid eye; a mirror in the breast of nature. The sins of the wood are washed out in it. See how the woods form an amphitheatre about it, and it is an arena for all the genialness of nature. All the trees direct the traveller to its brink, all paths seek it out, birds fly to it, quadrupeds flee to it, and the very ground inclines toward it. It is nature's saloon, where she has sat down to her toilet. Consider her silent economy and tidiness; how the sun comes with his evaporation to sweep the dust from its surface each morning, and a fresh surface is constantly welling up; and annually, after whatever impurities have accumulated herein, its liquid transparency appears again in the spring.
(V, 175)

Thoreau's ecology in the passage is of course negligible as science. Any biological dependence that draws man and other animals to the lake is subordinated to the spiritual need that the lake satisfies. The woodland lake, obviously Walden Pond, is more important to Thoreau as a place of purification than as a water hole. But again it should be noted that his transcendental vision still prompts him to relate the lake to the birds and mammals and the very topography of the land. It may be unimpressive, even bad science, but the result is, nevertheless, the expression of an ecological perspective. Thoreau does not view the lake in isolation or merely draw a human relation to it: he sees it as an integral, functioning part of nature--a source of water for the creatures of the forest and a participant in the water cycle.

The same regard for relatedness marks several other comments about man and nature in the essay. Observing a deserted hut, Thoreau notes that this human intrusion into the woods has caused an invasion of new birds and plants: "Singing birds and flowers have perchance begun to appear here, for flowers as well as weeds follow in the footsteps of man" (V, 172). Thoreau is aware, then, that even a slight disturbance by man indirectly affects the distribution of animal and plant species and the very composition of the forest community. Reciprocally, Thoreau writes of man's practical relation to the forest:

We borrow from the forest the boards which shelter and the sticks which warm us. How important is their evergreen to the winter, that portion of the summer which does not fade, the permanent year, the unwithered grass! . . . What would human life be without forests, those natural cities? (V, 169)

But once again, as the sense of the passage shows, and as Sherman Paul has pointed out,⁶ Thoreau seeks to remind men not only of their physical but also their spiritual dependence on nature. Typically, Thoreau uses a materialistic vehicle, such as an ecological fact, to convey his transcendental message. Such is the process by which he makes fact flower transcendently into truth.

If Thoreau is occasionally able to synthesize his observations both ecologically and transcendently in his early nature essays, however, then certainly Walden, the

⁶Paul, p. 169.

product of his two-year sojourn in the woods, is his supreme combination of both forms of synthesis. But Walden will be discussed in a separate chapter, for much of its factual content comes not from Thoreau's observations in the period from 1845 to 1847 but from the early 1850's. Thus, if Walden reflects Thoreau's initial passion for transcendental truth, it also reflects his steadily increased absorption in scientific facts.

For the time being, it is the effects of Thoreau's stay at the Pond upon him that are of chief interest. Before going to Walden, Thoreau went to nature primarily to discern the ideal, much as Emerson did. After the Walden years, Thoreau had at least as much interest in nature for its own sake as in its symbolic aspect. His life at the Pond was a formative experience because it also opened up a new theme for his writing--how man lives in nature. As the subtitle of Walden, "Life in the Woods," indicates, Thoreau became concerned with man's fundamental relationship to nature. Certainly he had written of man's dependence on the forest previously, and in both "A Natural History of Massachusetts" and "A Winter Walk" he had applauded the fisherman's intimate relationship with nature. But Thoreau was then interested mainly in man's psychological or spiritual communion with the natural world. In "A Winter Walk," for example, he writes of the ice fisherman:

He does not make the scenery less wild, more than the jays and muskrats, but stands there as a part of it, as the natives are represented in the

voyages of early navigators He belongs to the natural family of man, and is planted deeper in nature and has more root than the inhabitants of towns. Go to him, ask what luck, and you will learn that he too is a worshiper of the unseen. (V, 181)

The fisherman's true roots in nature are emotional. He is, claims Thoreau, more healthy mentally than the non-fishing townsman. In reality, the fisherman is not biologically dependent on catching fish; Thoreau simply makes symbolic use of this holidayer in nature. With his stay at Walden, however, Thoreau came increasingly to focus on man's real functional relation to nature.

Understandably, when Thoreau went on a trip to Maine in September of 1846, he took this new interest with him. The essay "Ktaadn," the result of that trip, was published in The Union Magazine for 1848, and amply demonstrates Thoreau's new emphasis on human ecology in his writing. Of course, Thoreau's journey into the Maine wilderness encouraged this preoccupation. Previously Thoreau had been surrounded by a rural landscape; his "nature" was half-civilized, and its relatively benign face lent itself to an idealizing mind. But in Maine Thoreau encountered a nature so raw it could not be symbolized. On top of Mount Katahdin what he glimpsed through the mist was overwhelmingly concrete:

It was vast, Titanic, and such as man never inhabits. Some part of the beholder, even some vital part, seems to escape through the loose grating of his ribs as he ascends. He is more lone than you can imagine. . . . Vast, Titanic,

inhuman Nature has got him at disadvantage, caught him alone, and pilfers him of some of his divine faculty. She does not smile on him as in the plains. She seems to say sternly, Why came ye here before your time. This ground is not prepared for you. Is it not enough that I smile in the valleys? I have never made this soil for thy feet, this air for thy breathing, these rocks for thy neighbors. I cannot pity nor fondle thee here, but forever relentlessly drive thee hence to where I am kind. Why seek me where I have not called thee, and then complain because you find me but a stepmother? (III, 70-71)

Further on he adds:

What is this Titan that has possession of me? Talk of mysteries! Think of our life in nature,-- daily to be shown matter, to come in contact with it,--rocks, trees, wind on our cheek! the solid earth! the actual world! the common sense! Contact! Contact! Who are we? Where are we? (III, 79)

Thoreau has enough trouble just coping with the material world, let alone interpreting it transcendently. Indeed, his repeated references to nature as "Titanic" suggest he is positively distressed by its almost supernatural aspect. An ecological perspective at least provides a sense of order in this seemingly chaotic wilderness. Thus, just prior to his glimpse of the mountaintop, Thoreau, as if to fortify himself perceptually, notes some of the environmental factors that produced the thick belt of dwarfed trees, mosses, and cranberries surrounding Katahdin's peak. "It seemed that in the course of time they had filled up the intervals between the huge rocks, and the cold wind had uniformly leveled all over," he writes; "Here the principle of vegetation was hard put to it" (III, 67). With alike observations one could begin

to apprehend this bewildering, "inhuman Nature." Indeed, it almost seems that in the rest of the essay Thoreau is particular about defining the pioneer and lumberman's relation to wild nature simply to balance his own confusion.

Certainly much of "Ktaadn" is concerned with man's response to the wilderness. Near the beginning of the essay, for instance, after describing the extensive lumbering and waste of wood that he observed in Maine, Thoreau states disapprovingly: "The mission of men there seems to be, like so many busy demons, to drive the forest all out of the country, from every solitary beaver swamp and mountain-side, as soon as possible" (III, 5-6). He thus recognizes the insane, self-defeating exploitative attitude that men on the frontier had towards nature. In "Ktaadn," however, Thoreau does not yet plead for the preservation of the forest, only its wise use. Passing through an area burned over simply in order to clear the land, he remarks:

The trees lay at full length, four or five feet deep, and crossing each other in all directions, all black as charcoal, but perfectly sound within, still good for fuel or for timber; soon they would be cut into lengths and burnt again. Here were thousands of cords, enough to keep the poor of Boston and New York amply warm for a winter, which only cumbered the ground and were in the settler's way. And the whole of that solid and interminable forest is doomed to be gradually devoured thus by fire, like shavings, and no man to be warmed by it. (III, 18-19)

For a change, Thoreau's humanitarianism shows itself very basically materialistic and does not involve his usual spiritual concerns. Thoreau also reminds his readers of the atmospheric

conditions caused by extensive burning and the careless attitude of hunters and lumbermen to fire in the forest: "The lumberers rarely trouble themselves to put out their fires, such is the dampness of the primitive forest; and this is one cause, no doubt, of the frequent fires in Maine, of which we hear so much on smoky days in Massachusetts" (III, 45). While Thoreau is obviously not protesting air pollution, he at least points out the far reaching effects of an insensitive approach to nature. In addition to his concern with man's impact upon the forest, Thoreau speculates upon how human settlement has affected wild animals. Of the moose, in particular, he writes: ". . . these animals are probably more numerous there now than ever before, being driven into this wilderness, from all sides, by the settlements" (III, 63). Whether or not Thoreau was right in his surprisingly rosy estimation that the density of the moose population was increased by competition with men for space is, of course, questionable, as many factors affect the distribution patterns of animals. But again it must be stressed that Thoreau at least considers such an interspecific cause for an increase in moose; he does not attribute it exclusively to successful breeding.

Thoreau's interest in man and nature is not one-sided either, as he also notes in "Ktaadn" how man has adapted to the wilderness as well as his effect upon it. Consequently, Thoreau describes at length the crude dwellings, "very proper forest houses" (III, 21), in which the lumbermen live, and the

settlers' homesteads (III, 27-8). He lists the foods that the settler can raise and what has to be packed into the woods (III, 22, 26). He outlines the method of forest agriculture:

The mode of clearing and planting is to fell the trees, and burn once what will burn, then cut them up into suitable lengths, roll in heaps, and burn again; then, with a hoe, plant potatoes where you can come at the ground between the stumps and charred logs; for a first crop the ashes sufficing for manure, and no hoeing being necessary the first year. In the fall, cut, roll, and burn again, and so on, till the land is cleared; and soon it is ready for grain, and to be laid down. (III, 15)

Thus, if the man on the frontier subdued the wilderness, he still had to adapt his shelter, food, and system of farming to his new environment. All Thoreau's observations are concerned with how a man actually lives in the woods, with how a man lives, "as it were, in the primitive age of the world, a primitive man" (III, 87). Yet Thoreau wisely notes that, however primitive the white man's life, it is always comparatively civilized to the Indian's. The white man's artifices removed him from nature, while the Indian's basic utilization of nature kept him in vital contact with it. According to Thoreau, the Indian was "a still more ancient and primitive man" than the settler:

In a bark vessel sewn with the roots of the spruce, with horn-beam paddles, he dips his way along. He is but dim and misty to me, obscured by the aeons that lie between the bark canoe and the batteau. He builds no house of logs, but a wigwam of skins. He eats no hot bread and sweet cake, but musquash and moose meat and the fat of bears. (III, 87-88)

The difference between the Indian and the white man, of course, was the difference between a hunting and an agrarian economy. But the Indian's relationship with nature would be a subject more fully explored in Thoreau's two subsequent Maine woods essays--"Chesuncook" and "The Allegash and East Branch." For the time being, his knowledge limited him to a discussion of the white man's interrelation with nature.

This, then, is Thoreau's early ecological perspective at its peak. Engendered by the transcendental principle of organic unity and shaped by his experiences at Walden Pond and Mt. Katahdin, Thoreau's ecology came more and more to be concerned in his public writings with how man is related to nature and what is his impact upon it. As in all Thoreau's travel narratives, though, the theme is subordinate in "Ktaadn" to the description of the journey itself, but it is no less an integral part of the essay. Thoreau's ecologic view of the landscape is a basic aspect of his approach to nature.

While Thoreau's general and human ecological observations also appear in A Week on the Concord and Merrimack Rivers, the book on the whole represents a return to the perspective of essays like "A Walk to Wachusett." Thoreau's ecology is once again subjugated to symbolic ends. This is quite understandable, however, because the bulk of A Week is derived from Thoreau's essays and journals prior to 1845. Thus, that A Week contains an abiding transcendental view of the world is hardly surprising.

Many of the reflective passages in A Week employ ecological situations only metaphorically. A few examples will suffice. The environmental requirements of a tree come to represent human virtue. Writing on the value of biographies, Thoreau states:

The life of a good man will hardly improve us more than the life of a freebooter, for the inevitable laws appear as plainly in the infringement as in the observance, and our lives are sustained by a nearly equal expense of virtue of some kind. The decaying tree, while yet it lives, demands sun, wind, and rain no less than the green one. (I, 101)

The occasional spiritual nourishment that men receive is compared to the chance predations of a hawk (I, 102). The development of human character is paralleled to a simplistic theory of forest succession: "The constant abrasion and decay of our lives makes the soil of our future growth. The wood which we now mature, when it becomes virgin mould, determines the character of our second growth, whether that be oaks or pines" (I, 375). The extension of the geographic range of temperate plants is declared a sign of spiritual vitality and sustenance (I, 158). Meditating on time, Thoreau alludes to biogeochemical cycles:

I sit now on a stump whose rings number centuries of growth. If I look around I see that the soil is composed of the remains of just such stumps, ancestors to this. The earth is covered with mould. . . . I raise my fairest and freshest flowers in the old mould. . . . It is not fertile ground which we walk on, but the leaves which flutter over our heads. The newest is but the oldest made visible to our senses. (I, 160)

In these and similar passages, Thoreau shows that he is unwilling to let a biological view of the world constitute his sole thought; he casually adapts it to his philosophic aims. Instead of giving equal importance to his nature observations and his philosophizings (as he does in Walden), Thoreau sacrifices the former to the latter, he abandons the literal for the figurative! The result is an unbalanced world view. But these blendings of philosophy and biology are typical of Thoreau's early application of the doctrine of correspondence.

A more knowledgeable use of ecological data is found in Thoreau's discussion of fishes. As Paul has stated, "Speaking of fishes, Thoreau was in effect speaking of thoughts, of a mode of the spirit" ⁷ Thus, Thoreau makes the population dispersal of fish represent the vitality of thought:

The seeds of the life of fishes are everywhere disseminated, whether the winds waft them, or the waters float them, or the deep earth holds them; wherever a pond is dug, straightway it is stocked with this vivacious race. They have a lease of nature, and it is not yet out. The Chinese are bribed to carry their ova from province to province in jars or in hollow reeds, or the water-birds to transport them to the mountain tarns and interior lakes. There are fishes wherever there is a fluid medium, and even in clouds and in melted metals we detect their semblance. (I, 23-24)

Not the mechanisms of dispersal--water, men, and birds--but their symbolic meaning as liberators of thought is what interests Thoreau. The fairly sophisticated ecologic

⁷ Paul, p. 213.

information is incorporated, as the last fanciful sentence in the passage shows, into the poetic import of the topic. However, there seems to be no clear symbolic significance attached to the rest of Thoreau's ecological fish data. It appears simply to reflect his genuine interest in fish (in the late 1840's Thoreau even began to send specimens to scientists). Accordingly, he notes the food of bream: "From time to time they nibble the weeds at the bottom or overhanging their nests, or dart after a fly or a worm" (I, 25); the habitat of perch: "It rather prefers the clear water and sandy bottoms, though here it has not much choice" (I, 27); and the interspecific and environmental factors that imperil the survival of young bream:

The spawn is exposed to so many dangers that a very small proportion can ever become fishes, for beside being the constant prey of birds and fishes, a great many nests are made so near the shore, in shallow water, that they are left dry in a few days, as the river goes down. (I, 25)

All this information is part of a natural history report on the fish of the Concord and Merrimack rivers. That Thoreau includes such data shows his increased focus on the material world for itself and the fairly high degree of his ecological awareness. But the tension between this physical data and the symbolic equation fish equals thought is similar to that, running throughout A Week, between the alternating concrete world of the rivers and the abstract world of Thoreau's literary, social, and philosophic ruminations.

Another ecological topic, which discloses much the same issues, is the dams. Paul identifies the dams as representative of "all the ominous forces that had destroyed the wild, the possibilities of natural and spiritual life in America."⁸ Certainly the symbolic appropriateness of the dams is shown in Thoreau's comments on their interfering with the migration of fishes:

Salmon, shad, and alewives were formerly abundant here, and taken in weirs by the Indians, who taught this method to the whites, by whom they were used as food and as manure, until the dam and afterward the canal at Billerica, and the factories at Lowell, put an end to their migrations hitherward; though it is thought that a few more enterprising shad may still occasionally be seen in this part of the river. It is said, to account for the destruction of the fishery, that those who at that time represented the interests of the fisherman and the fishes, remembering between what dates they were accustomed to take the grown shad, stipulated that the dams should be left open for that season only, and the fry, which go down a month later, were consequently stopped and destroyed by myriads. Others say that the fish-ways were not properly constructed. Perchance, after a few thousands of years, if the fishes will be patient, and pass their summers elsewhere meanwhile, nature will have levelled the Billerica dam, and the Lowell factories, and the Grass-ground River run clear again, to be explored by new migratory shoals (I, 32)

But the dams are more than a convenient symbol to Thoreau, for their ecological effects are, as above, discussed at some length. He repeats himself about the dams and fish

⁸ Paul, p. 214.

several times (see I, 31, 35-36, 91). Moreover, he introduces the dams at the very beginning of A Week by observing how their flooding of riverside land has altered the plant community there:

The shore is more flat on the Wayland side, and this town is the greatest loser by the flood. Its farmers tell me that thousands of acres are flooded now, since the dams have been erected, where they remember to have seen the white honeysuckle or clover growing once, and they could go dry with shoes only in summer. Now there is nothing but blue-joint and sedge and cut-grass there, standing in water all the year round. (I, 4)

It is not a case of Thoreau's selecting a suitable symbol but of the symbolic significance of the dams arising out of his knowledge of local history and his ecological perceptivity. Personal observation and inquiry about the specific effects of the dams obviously preceded any literary intention. The dams are as much physical "facts" as symbolic "truths."

Nor are the preceding examples the only indications in A Week of Thoreau's ecological perspective, for Thoreau often comments about human life on and beside the river with a similar slant. He notes how rivers are related to human distribution and dispersal: "They are the natural highways of all nations, not only levelling the ground and removing obstacles from the path of the traveler, quenching his thirst and bearing him on their bosoms, but conducting him through the most interesting scenery, the most populous portions of the globe . . ." (I, 11). Thoreau observes how several instances

of erosion have been indirectly caused by man. He writes of erosion by water: "It [the Merrimack] is probably wider than it was formerly, in many places, owing to the trees having been cut down, and the consequent wasting away of its banks" (I, 88). Passing by a "small desert," he records an instance of erosion by wind:

A very old inhabitant . . . told us that he remembered when corn and grain grew there, and it was a cultivated field. But at length the fishermen . . . pulled up the bushes on the shore, for greater convenience in hauling their seines, and when the bank was thus broken, the wind began to blow up the sand from the shore, until at length it had covered about fifteen acres several feet deep. (I, 152)

Seeing another extensive sandy area and learning that it was caused by sheep, which, "being worried by fleas, began to paw the ground, till they broke the sod and so the sand began to blow" (I, 209), Thoreau recommends: "This evil might easily have been remedied, at first, by spreading birches with their leaves on over the sand, and fastening them down with stakes, to break the wind" (I, 209). Finally, Thoreau outlines the stages of human settlement:

Some spring the white man came, built him a house, and made a clearing here, letting in the sun, dried up a farm, piled up the old gray stones in fences, cut down the pines around his dwelling, planted orchard seeds brought from the old country, and persuaded the civil apple-tree to blossom next to the wild pine and the juniper, shedding its perfume in the wilderness. Their old stocks still remain. He culled the graceful elm from out the woods and from the riverside, and so refined and smoothed his village plot. He rudely

bridged the stream, and drove his team afield into the river meadows, cut the wild grass, and laid bare the homes of beaver, otter, muskrat, and with the whetting of his scythe scarred off the deer and bear. He set up a mill, and fields of English grain sprang up in the virgin soil. And with his grain he scattered the seeds of the dandelion and the wild trefoil over the meadows, mingling his English flowers with the wild native ones. The bristling burdock, the sweet-scented catnip, and the humble yarrow planted themselves along his woodland road, they, too, seeking "freedom to worship God" in their way. And thus he plants a town. The white man's mullein soon reigned in Indian corn-fields, and sweet-scented English grasses clothed the new soil. Where, then, could the red man set his foot? (I, 52)

Thus Thoreau recognizes man's use and abuse of his natural surroundings. In the immediately preceding passage, he relates the story of man's encroachment on nature. From the eradication of certain plants and animals to the introduction and favoring of competitive species, Thoreau sees how profound is the impact of the white man's method of settling on the new land. By comparing the present landscape with his knowledge of the past, Thoreau achieves an ecological perspective with a broad historical dimension; he cannot help but see how the white man has reshaped his environment, with its consequent effect on native animals and plants and on the Indian, who had lived in harmony with wild America. Moreover, all these human ecological observations relate to one of Thoreau's major themes in A Week: the contrast between the primitive freedom of the voyage on the river and the civilized, man-dominated landscape through which the voyagers pass.

With regard to man and nature, it must be pointed out that while Thoreau's ecological perspective proceeds from the transcendental idea of organic unity, it is radically different from Emerson's viewpoint. For Emerson, "All the parts [of Nature] incessantly work into each other's hands for the profit of man."⁹ Thoreau, in contrast, sees man as a functioning part of nature. Near the end of A Week, he writes:

Thus thoughtfully we were rowing homeward to find some autumnal work to do, and help on the revolution of the seasons. Perhaps Nature would condescend to make use of us even without our knowledge, as when we help to scatter her seeds in our walks, and carry burs and cockles on our clothes from field to field. (I, 415)

At best man fits harmoniously into nature; at worst he exploits it. Necessarily, Thoreau encourages the former relationship. He states, for example: "The farmer who has skimmed his farm might perchance leave his body to Nature to be plowed in, and in some measure restore its fertility. We should not retard but forward her economies" (I, 179). Nature is not made for man but man for nature. Neither does nature spontaneously work, nor is it exclusively to be harnessed, for human benefit. Thoreau perceives that man must ultimately live within a natural framework. Man is encompassed by the processes of nature.

Although Thoreau is chiefly concerned in A Week with propounding transcendental truths, he still shows his interest

⁹ Emerson, Complete Works, I, 14.

in physically coming to terms with nature. Nature is not simply a subject for contemplation but a system in which one is inextricably involved. This new emphasis on understanding the external world, which began with "Ktaadn," finds its basis, in the conclusion of A Week, in Thoreau's questioning of the doctrine of correspondence: "Is not Nature, rightly read, that of which she is commonly taken to be the symbol merely?" (I, 408) If nature is an end in itself, then Emerson's contention, "Every natural fact is a symbol of some spiritual fact,"¹⁰ no longer applies. Natural facts need not be symbolized but can be understood within a material frame of reference; indeed, their sole meaning derives from the material world because there is no ideal world to which they can refer. Thoreau, however, leaves such a strictly materialistic comprehension of nature to subsequent travel narratives. But if A Week on the Concord and Merrimack Rivers generally contains much the same treatment of nature as in Thoreau's early essays, then it also shows in places a more considered, more knowledgeable view of man and nature which Thoreau had developed over the years.

During the 1840's Thoreau undoubtedly progressed from providing simple demonstrations of organic unity and applications of the doctrine of correspondence to a broad ecological perspective founded on a knowledge of the history of man's

¹⁰ Emerson, Complete Works, I, 27.

relation to nature in America. He began to observe more closely how animals and plants, in particular man, depended on and affected their environment. Yet if there was the philosophic impulse to perceive and understand relationships in nature, then there was the equally philosophic (and literary!) impulse to transform those relationships into meaningful spiritual symbols. Usually Thoreau ended up by stressing one or the other tendency. Only in Walden was he to achieve a balance between his ecologic and transcendental visions.

Chapter II--Walden: the Synthesis of Vision

The tension between the symbolic and objective modes of vision (one of which usually tends to dominate Henry Thoreau's writings) is finally resolved in Walden. For years readers have considered the book a mixture of social criticism and nature observation, and this attests to the strength of its literal level. But Walden, as critics have increasingly shown, is also a symbolic tale of the individual's spiritual growth. Thus, if Walden provides an account of Thoreau's life in the world of nature, then it also presents the world of nature as suggestive of the individual's life. And central to Thoreau's depiction of the individual's physical and spiritual life is human involvement in nature's web. Thoreau's ecological perspective both unifies his treatment of nature and informs the symbolic import of Walden.

Much of Walden is explicitly concerned with the inter-relation between man and nature. Indeed, "Walden, both the experience of living by the pond and the book that reported it," as Stanley Edgar Hyman points out, ". . . was an experiment in human ecology . . . an attempt to work out a satisfactory relationship between man and his environment."¹ Thoreau not only relates the details of his own "life in the woods" but also examines the basis of life for all men.

¹ Stanley Edgar Hyman, "Henry Thoreau in Our Time," in Thoreau: A Century of Criticism, ed. Walter Harding (Dallas: Southern Methodist Univ. Press, 1954), p. 175.

His first chapter, "Economy," founded upon an ecological view of man the animal, is loosely organized around a discussion of what Thoreau calls the "necessaries of life." He compares directly man's biological needs to those of other creatures:

By the words, necessary of life, I mean whatever, of all that man obtains by his own exertions, has been from the first, or from long use has become, so important to human life that few, if any, whether from savageness, or poverty, or philosophy, ever attempt to do without it. To many creatures there is in this sense but one necessary of life, Food. To the bison of the prairie it is a few inches of palatable grass, with water to drink; unless he seeks the Shelter of the forest or the mountain's shadow. None of the brute creation requires more than Food and Shelter. The necessaries of life for man in this climate may, accurately enough, be distributed under the several heads of Food, Shelter, Clothing, and Fuel; for not till we have secured these are we prepared to entertain the true problems of life with freedom and a prospect of success. (II, 13)

These needs are, in part, the subjects that Thoreau will explore during the course of Walden. But while taking a materialistic view of man, Thoreau keeps in sight the higher aims of human life. His purpose in determining the fundamental requirements for life is to show how little energy the individual need expend on satisfying these and how much energy he can devote to the equally important cultivation of self. In addition, as will shortly be seen, Thoreau makes even the activities that satisfy human needs symbols of self-cultivation. Thus Thoreau weighs his biological

viewpoint against a philosophical objective, subjugating neither one to the other. This search for equilibrium is evident in the following comparison:

The soil, it appears, is suited to the seed, for it has sent its radicle downward, and it may now send its shoot upward also with confidence. Why has man rooted himself thus firmly in the earth, but that he may rise in the same proportion into the heavens above?
(II, 17)

Throughout Walden Thoreau is intent upon showing man's biological roots as well as any philosophical shoots. If the biological message of Walden is that man is a material creature physically involved in nature, then its philosophical message is that man can only realize his full self by becoming psychologically involved with nature.

But, understandably, Thoreau begins his book by examining man's physical ties to the natural world. Reducing the relationship to its elemental level, he conceives of man's basic needs-- food, shelter, clothing, and fuel--as operating thermodynamically. "It appears, therefore," Thoreau states, ". . . that the expression, animal life, is nearly synonymous with the expression, animal heat" (II, 14). The support of human life is then fundamentally a problem of maintaining this "vital heat" (II, 14). Using an analogy, put forth by Justus von Liebig, the nineteenth-century German chemist, that "man's body is a stove" (II, 14), Thoreau discusses man's relation to matter essentially in terms of energy transference or at least utilization. All this is not to imply that Thoreau anticipated

the laws of thermodynamics, but it should make clear that he was capable of occasionally viewing relationships in nature on a primary plane.

Moreover, the notion of an individual's heat being equivalent to his life provides an excellent symbol of the vital self. The evanescence of heat appropriately represents the impermanence of the individual's identity. Thus a scientific perception becomes transmuted into a philosophic symbol.

Much the same method is employed in discussing the necessary of life Clothing. Of clothes Thoreau states: "Let him who has work to do recollect that the object of clothing is, first, to retain the vital heat . . ." (II, 23). Thus clothing is a buffer against the environment. The rest of Thoreau's discussion is taken up chiefly with a critique of fashion in dress. Thoreau champions utility. But the philosophical equivalent of clothing's biological functionality is, of course, that a man's clothing should identify his true character. From an ecological defence of clothes, Thoreau then proceeds to symbolize clothing as the identification of self and to demand that it be truly representative. A man's clothes should be both serviceable and unpretentious. Thus Thoreau grafts symbolically a moral message onto his framework of biological truth.

Thoreau's discussion of another necessary of life, Fuel, is confined to materialistic matters. In the nineteenth century, of course, wood was still the major fuel: ". . . in

most parts of the world," Thoreau writes, "the prince and the peasant, the scholar and the savage, equally require still a few sticks from the forest to warm them and cook their food" (II, 277). One of Thoreau's concerns is, then, with the wise utilization of this resource. At Walden, Thoreau burned the stumps extracted from his beanfield, "the dead and for the most part unmerchanted wood behind [his] house, and the driftwood from the pond" (II, 60) for heat and cookery. He consciously practised an extreme natural economy. During his second winter, by using a small cooking stove, he even applied technology to conserve the forest. By his own example Thoreau advocates the husbanding of earth's commodities.

Collateral with Thoreau's remarks on fuel is his observation on human survival and climate. Thinking of the long New England winters, Thoreau perceives that, despite heated houses, men remain in a precarious position with regard to cold weather. He states: ". . . need we trouble ourselves to speculate how the human race may be at last destroyed. It would be easy to cut their threads any time with a little sharper blast from the north" (II, 280). Man, indeed all life, Thoreau knows, is still very much subordinate to the climatic part of the environment; human existence on earth is solely possible because of a moderate range of surface temperatures.

But, not surprisingly, Thoreau elaborates most fully on man's relation to nature in discussing his chief necessary of life--Food. In search of an economically simple life

Thoreau is forced into closer connection with nature. He makes primary use of wild plants and animals as well as cultivating regular crops, and he discovers just how rudimentary are man's dietetic requirements.

I learned from my two years' experience . . . that a man may use as simple a diet as the animals, and yet retain health and strength. I have made a satisfactory dinner, satisfactory on several accounts, simply off a dish of purslane (Portulaca oleracea) which I gathered in my cornfield, boiled and salted. (II, 68)

Neither great diversity nor high quality are necessary in the foods needed for human survival.

Thoreau also perceives the flexibility of man's position as an omnivore. He reports mockingly:

One farmer says to me, "You cannot live on vegetable food solely, for it furnishes nothing to make bones with;" . . . walking all the while he talks behind his oxen, which, with vegetable-made bones, jerk him and his lumbering plow along in spite of every obstacle. (II, 10)

Applying his knowledge of biology, Thoreau argues that the path to economic simplicity is, in part, biological simplification--the elimination of a link in the food chain between plants and men. If men change from part-time carnivores to exclusively herbivores and eat only their own or nature's produce, then their socioeconomic connections are reduced, their relation to nature is more immediate. Thoreau

gives some specific advice:

Every New Englander might easily raise all his own breadstuffs in this land of rye and Indian corn, and not depend on distant and fluctuating markets for them. . . . For the most part the farmer gives to his cattle and hogs the grain of his own producing, and buys flour, which is at least no more wholesome, at a greater cost, at the store. I saw that I could easily raise my bushel or two of rye and Indian corn, for the former will grow on the poorest land, and the latter does not require the best, and grind them in a hand-mill, and so do without rice and pork; and if I must have some concentrated sweet, I found by experiment that I could make a very good molasses either of pumpkins or beets, and I knew that I needed only to set out a few maples to obtain it more easily still (II, 70-71)

Thus, by relying on native resources, men escape the complexities of trade and establish firmer bonds with nature.

To his economic reasons for utilizing plants directly, Thoreau adds, in the chapter "Higher Laws," the philosophic ideal of purity. Eating meat, he contends, defiles the body; thus vegetarianism becomes a symbol of purification. Of course, Thoreau can never adhere even intellectually to vegetarianism. Just as at the beginning of "Higher Laws" he is "strongly tempted to seize and devour [a woodchuck] raw" (II, 232), so he repeatedly is attracted, as will soon be seen, to the life of the hunter and fisherman. What matters ultimately is healthy involvement with nature, not the variety of that involvement. Consequently, whether Thoreau's arguments for a vegetarian diet are economic or transcendental, their basis still lies his ecological interests.

The same interests are evident in Thoreau's discussion of farming at the subsistence level. The chapter "The Bean-Field" deals not only with methods of agriculture but also with the dynamics of nature. Charles Anderson has stated that the chapter is largely humorous and symbolic: Thoreau's agricultural venture is an economic failure, though he contends it is a success; the true subject is the cultivation and disciplining of self.² Yet Thoreau's ecological viewpoint in his account of raising beans should not be discounted. Though it may serve humorous and symbolic ends, such a viewpoint, nevertheless, constitutes Thoreau's abiding perceptual relation to nature.

Thoreau begins "The Bean-Field" by stating this sense of relationship by means of a simile. The beans, he says, "attached me to the earth, and so I got strength like Antaeus" (II, 171). Just as the giant wrestler was physically renewed, so Thoreau is sentiently renewed through contact with the land. Indeed, as Sherman Paul states, the primary impulse for Thoreau's cultivating beans is to achieve a feeling of involvement with nature. "He had worked in the beanfield, moreover, not so much for the sake of beans," Paul asserts, ". . . as for the sake of participating in the natural processes, for intimacy with nature, because he believed that farming was a natural and unspecialized vocation, a primitive and universal one" ³ The idea of relation is carried

²Charles Anderson, The Magic Circle of Walden (New York: Holt, Rinehart and Winston, 1968), pp. 86-87 & 178.

³Paul, p. 329.

further in Thoreau's comparison of Walden woods as he knew it when a child with the woods of his manhood:

The pines still stand here older than I; or, if some have fallen, I have cooked my supper with their stumps, and a new growth is rising all around, preparing another aspect for new infant eyes. Almost the same johnswort springs from the same perennial root in this pasture, and even I have at length helped to clothe that fabulous landscape of my infant dreams, and one of the results of my presence and influence is seen in these bean leaves, corn blades, and potato vines. (II, 172)

While acknowledging the effects upon the woods of his living near the pond and of his farming, Thoreau conceives of himself as fitting into the natural world and of his impact being absorbed by the environment.

This does not mean that Thoreau fails to apprehend the artificiality of all farming activities. He writes of the ground-nut's fate as an example of the unnatural stress caused by the introduction and growing of alien plants:

Cultivation has well-nigh exterminated it. . . . In these days of fatted cattle and waving grain-fields this humble root . . . is quite forgotten, or known only by its flowering vine; but let wild Nature reign here once more, and the tender and luxurious English grains will probably disappear before a myriad of foes, and without the care of man the crow may carry back even the last seed of corn to the great cornfield of the Indian's God in the southwest, whence he is said to have brought it; but the now almost exterminated ground-nut will perhaps revive and flourish in spite of frosts and wildness, prove itself indigenous, and resume its ancient importance and dignity as the diet of the hunter tribe. (II, 264-265)

Thoreau perceives that farm crops flourish solely because of human protection, that in their abundance they exclude native plants adapted to the same open land, and that in free competition they might be eliminated, certainly reduced in range, by native plants. Thoreau's sympathy, as his fanciful reference to the crow obviously indicates, is with wild nature. Nevertheless, in raising his beans at Walden, Thoreau discriminates against other plants:

Consider the intimate and curious acquaintance one makes with various kinds of weeds . . . disturbing their delicate organizations so ruthlessly, and making such invidious distinctions with his hoe, levelling whole ranks of species, and sedulously cultivating another.
(II, 178)

Thoreau's daily work, then, is to compete against the native plants and also animals such as woodchucks; he is acutely aware of the disruption that he is causing in the ordinary fabric of nature. Yet he realizes too that the tending of beans involves him in nature's workings, even if it does upset the normal biotic community:

This was my curious labor all summer,--to make this portion of the earth's surface, which had yielded only cinquefoil, blackberries, johnswort, and the like, before, sweet wild fruits and pleasant flowers, produce instead this pulse. . . . My auxiliaries are dews and rains which water this dry soil, and what fertility is in the soil itself, which for the most part is lean and effete. My enemies are worms, cool days, and most of all woodchucks. . . . But what right had I to oust

johnswort and the rest, and break up their ancient herb garden? Soon, however, the remaining beans will be too tough for them, and go forward to meet new foes. (II, 171-172)

Thus Thoreau sees that he is both resisted and abetted by nature, that he himself becomes an environmental force operating on the various plant species, that he too plays a role in nature.

Because Thoreau considers all forms of life valuable, however, he contends that any evaluation of biological productivity should include wild as well as domestic nature:

And, by the way, who estimates the value of the crops which nature yields in the still wilder fields unimproved by man? The crop of English hay is carefully weighed, the moisture calculated, the silicates and the potash; but in all dells and pond-holes in the woods and pastures and swamps grows a rich and various crop only unreaped by man. Mine was, as it were, the connecting link between wild and cultivated fields . . . my field was . . . a half-cultivated field. They were beans cheerfully returning to their wild and primitive state that I cultivated (II, 174)

Thoreau is unwilling to discount the fecundity of wild nature simply because it does not economically profit man. Moreover, in affirming the importance of the whole natural world, Thoreau denounces an extractive attitude towards the land. The common farmer, he says, "knows Nature but as a robber" (II, 183). Instead of this selfish approach to nature Thoreau

champions a perspective which concedes a place to other living plants and animals and to land other than farms:

We are wont to forget that the sun looks on our cultivated fields and on the prairies and forests without distinction. They all reflect and absorb his rays alike, and the former make but a small part of the glorious picture which he beholds in his daily course. In his view the earth is all equally cultivated like a garden. Therefore we should receive the benefit of his light and heat with a corresponding trust and magnanimity. What though I value the seed of these beans, and harvest that in the fall of the year? This broad field which I have looked at so long looks not to me as the principal cultivator, but away from me to influences genial to it, which water and make it green. These beans have results which are not harvested by me. Do they not grow for woodchucks partly? . . . How, then, can our harvest fail? It matters little comparatively whether the fields fill the farmer's barns. The true husbandman will cease from anxiety, as the squirrels manifest no concern whether the woods will bear chestnuts this year or not, and finish his labor with every day, relinquishing all claim to the produce of his fields, and sacrificing in his mind not only his first but his last fruits also.
(II, 183-184)

However extravagant the ending of the above passage may be, it does show Thoreau's feeling of relatedness with all nature and his awareness of man's true position in the scheme of nature. Man is not the proprietor of the world--he is just one species that exists in it.

Thus, though the passage demonstrates the humor (in its extreme impracticality) and symbolism (in its plea for altruism) indicative, as was previously said, of "The Bean Field," it still expresses what is essentially an ecological

viewpoint. Thoreau consistently manifests his consciousness of the existence of other organisms and their interrelation with man. Again, his ecological perspective both gives coherence to his nature writing and serves symbolic ends. Undoubtedly, part of the symbolic disciplining of self in "The Bean-Field" is the recognition of man's place in nature.

That such recognition can best come from actually living in nature is made clear by Thoreau's building a hut at Walden Pond and by his observations on the fourth necessary of life--Shelter. First, he notes the importance of shelter to the survival of man:

Man . . . was at first bare and out of doors; but though this was pleasant enough in serene and warm weather, by daylight, the rainy season and the winter, to say nothing of the torrid sun, would perhaps have nipped his race in the bud if he had not made haste to clothe himself with the shelter of a house.
(II, 30)

While Thoreau's evolutionary sense is somewhat faulty,⁴ he does show his awareness of man's vulnerability to climate and of the significance of man's adaptation of shelter. He

⁴Thoreau's knowledge of the stages of human evolution, of course, is limited, but his grasp of the mechanism of evolution is pronounced. Parenthetically, it may be noted that Thoreau had no difficulty in accepting Darwin's theory of evolution. The idea of natural selection, the survival of those individuals best adapted to the environment, able to compete successfully for food and to escape predation, seems to have accorded with Thoreau's own understanding of ecological relationships.

also points out, however, how simple a shelter suffices for man. He discusses the skin wigwams of the Indians and the wood-lined holes in the ground of the first New England settlers. Yet Thoreau does not scorn civilized improvements in housing, for he acknowledges that "In such a neighborhood as this, boards and shingles, lime and bricks, are cheaper and more easily obtained than suitable caves, or whole logs, or bark in sufficient quantities, or even well-tempered clay or flat stones" (II, 44). What is of prime importance is to make intelligent use of the materials of nature at hand. Thoreau does not advocate primitivism but a wise utilization of resources. But the highly refined use of resources is dangerous in that it creates a gap between the civilized man and nature. The modern shelter sustains an artificial style of life:

From the cave we have advanced to roofs of palm leaves, of bark and boughs, of linen woven and stretched, of grass and straw, of boards and shingles, of stones and tiles. At last, we know not what it is to live in the open air, and our lives are domestic in more senses than we think. From the hearth the field is a great distance. (II, 31)

Civilized housing and life, Thoreau thus sees, have a psychological as well as a physical effect on man. Not only do they isolate him spatially from the rest of nature, but also they foster in him a sense of dissociation from nature.

Clearly, then, Thoreau's building of his own shelter at Walden is both a practical and symbolic act. On the figurative as well as the literal level it is a reintegration with nature (if it is ever possible really to escape nature!) and shows man's reliance on nature for a basic need.⁵ Thoreau locates his hut away from the village, in the woods, in as wild a nature as local conditions permit, and he uses pines and hickories, trees that he cuts himself on the site, to build the frame of his hut. Though Thoreau makes concessions to time, economy, and convenience by employing used boards, shingles, windows, bricks, and other ready-made items to finish the construction, he has dug his cellar in, and made his framework of, the substance of wild nature.

The hut at Walden Pond provides the opportunity, as R. B. Lewis states, "for a wholeness of spirit realized in a direct experience of the whole of nature."⁶ It was this possibility that lured other men, even if they were not fully conscious of it, to the woods. By living at the pond, Thoreau encounters these men, natural men who live their

⁵ Sherman Paul identifies another symbolic meaning of the hut: it "was perhaps the most obvious symbol of building his life . . ." (p. 329). But it is most important that Thoreau builds his life in nature where it will be interconnected with all the life about him. Once again, Thoreau's ecological perspective adds meaning to his symbol.

⁶R. B. Lewis, The American Adam: Innocence, Tragedy, and Tradition in the Nineteenth Century, (Chicago: Univ. of Chicago Press, 1955), p. 21.

lives in the wild, for the most part, harmoniously and with zest. He writes enviously of them:

Fishermen, hunters, woodchoppers, and others, spending their lives in the fields and woods, in a peculiar sense a part of Nature themselves, are often in a more favorable mood for observing her, in the intervals of their pursuits, than philosophers or poets even, who approach her with expectation. She is not afraid to exhibit herself to them. (II, 232-233)

Thoreau does not simply want to observe nature closely, however; he wants to function in nature. And he again gives symbolic meaning to his ecological observations: experience of nature comes to symbolize the self's contact with reality. Comparing the ice fisherman and the naturalist, Thoreau makes his desire for the real evident:

His [the fisherman's] life itself passes deeper in nature than the studies of the naturalist penetrate; himself a subject for the naturalist. The latter raises the moss and the bark gently with his knife in search of insects; the former lays open logs to their core with his axe, and moss and bark fly far and wide. He gets his living by barking trees. Such a man has some right to fish, and I love to see nature carried out in him. The perch swallows the grub-worm, the pickerel swallows the perch, and the fisherman swallows the pickerel; and so all the chinks in the scale of being are filled. (II, 314)

While it is impossible, of course, for Thoreau to avoid fitting into some kind of food chain, what he wants is to feel emotionally such entanglement in nature. The hut at Walden at least furnishes the chance of sensuous involvement;

it permits immersion in the forests and meadows surrounding Concord; it supplies "the tonic of wildness" (II, 350) that Thoreau claims all men need. Thus Thoreau can write: "This is a delicious evening, when the whole body is one sense, and imbibes delight through every pore. I go and come with a strange liberty in Nature, a part of herself" (II, 143). Another passage shows more of an ecological sensitivity:

What do we want most to dwell near to? Not to many men surely . . . but to the perennial source of our life, when in all our experience we have found that to issue, as the willow stands near the water and sends out its roots in that direction. (II, 148)

Thoreau's use of an ecological simile is revelatory. It at once exhibits his consciousness of the necessary relations in nature and suggests a similar psychological bond between man and nature. A more concrete bond is enunciated in the statement: "The earth . . . is a living earth; compared with whose great central life all animal and vegetable life is merely parasitic" (II, 340-341). Admittedly, Thoreau possesses a romantic sensibility, and the emotion from which the three preceding passages spring is typically romantic, but the presence of an ecological example (the willow tree--water simile) and the characterization of organic life as parasitic both indicate a heightened ecological awareness. Thoreau feels involved in nature (the emotion that he wants) when he observes and contemplates ecological situations.

Understandably, then, as the very chapter titles of Walden--"The Ponds," "Brute Neighbors," "Winter Animals," "The Pond in Winter," "Spring"--indicate, Thoreau is a keen reporter of the life about him. The hut at Walden provides an outpost for spying on nature and perceiving its workings. "As I sit by my window this afternoon . . . ," Thoreau writes, "a fish hawk dimples the glassy surface of the pond and brings up a fish; a mink steals out of the marsh before my door and seizes a frog by the shore" (II, 127).

One of Thoreau's major concerns, as the above quotation illustrates, is the search for food. Repeatedly in casual descriptions of nature he includes the theme, showing that animals as well as men pursue the necessities of life.⁷ In the chapters "Brute Neighbors" and "Winter Animals," in particular, he deals extensively with hunting and fishing by both man and beast. As Charles Anderson states, "Not just the plenitude of creatures in all their range and diversity fascinates him but the endless chain of eater and eaten."⁸ In "Winter Animals," for instance, Thoreau, having tossed a half bushel of ears of sweet corn outside his hut, relates how it is disposed of:

⁷ See, for example, his remarks on woodcocks searching for worms (II, 252), squirrels and jays eating nuts (II, 263-264), and predation at night (II, 143).

⁸ Anderson, p. 254.

In the twilight and the night the rabbits came regularly and made a hearty meal. All day long the red squirrels came and went

At length the jays arrive . . . and pick up the kernels which the squirrels have dropped. . . .

Meanwhile also came chickadees in flocks, which, picking up the crumbs the squirrels had dropped, flew to the nearest twig
(II, 302-304)

Thus, different creatures manage together to make full use of any food supply: there is no waste in nature. Thoreau also tells of partridges eating the buds of wild apple trees and of mice the bark of pitch pines. Though this last action results in killing the pines, Thoreau comments: ". . . perhaps it is necessary in order to thin these trees, which are wont to grow up densely" (II, 309). By combining his knowledge of tree distribution and his observation of an interspecific interaction, Thoreau concludes that such depredations as mice destroying pines are essential to the functioning of nature. Indeed, in "Spring" Thoreau affirms the sacrifice of many lives in the wild because it is a sign of the vital force of nature:

We are cheered when we observe the vulture feeding on the carrion which disgusts and disheartens us, and deriving health and strength from the repast. . . . I love to see that Nature is so rife with life that myriads can be afforded to be sacrificed and suffered to prey on one another; that tender organizations can be so serenely squashed out of existence like pulp,-- tadpoles which herons gobble up, and tortoises and toads run over in the road; and that sometimes it has rained flesh and blood! (II, 350)

The admissibility of mass death and the cycling of organic matter attest to the durability of nature. To Thoreau's understanding of the ecological necessity of predation, then, is added its symbolic value as an expression of nature's vitality. Anderson sums up Thoreau's intention accordingly:

Destruction is a necessary aspect of the abundant health and vitality of nature. It is not a world of two conflicting forces, life and death, but of a single triumphant vital force. Thus he justifies the ways of nature to man, who must find empathy with its wildness if he is to be at home there.⁹

Men are not only to empathize with nature but also to partake symbolically of its vitality. All the intimations and demonstrations of interrelation in nature serve symbolic ends in making significant to man the rebirth of nature in the spring and affirming the possibility of corresponding human spiritual rebirth. Thoreau's ecologic perceptions again further his symbolic meaning.

A skillful symbolic use of ecologic information is likewise made in Thoreau's account of Walden Pond. Undoubtedly, Thoreau's most comprehensive ecologic report is on the pond. The observations, examined by biologist Edward Deevey, have earned for Thoreau the title of pioneer limnologist. Deevey summarizes some of Thoreau's ecological findings thusly:

That Walden was a relatively unproductive lake was appreciated by Thoreau, who observed the scanty crop of littoral

⁹Anderson, p. 257.

vegetation, the absence of organic sediment except in the deepest water (where he correctly attributed its existence to decomposing forest leaves), and the "purity" of the water. He also realized that food chains are thus affected . . .; and he points out that the larger but comparatively shallow Sandy Pond (Flint's Pond) supports an abundance of aquatic vegetation, is "not remarkably pure," and "is more fertile in fish."

Walden water is indeed "pure" in respect to its plankton content.¹⁰

What distinguishes Thoreau's observations of Walden is their perceptivity and relative thoroughness. His remarks on the periodic rise and fall of the waters of the pond will illustrate these points:

This rise and fall of Walden at long intervals serves this use at least; the water standing at this great height for a year or more, though it makes it difficult to walk round it, kills the shrubs and trees which have sprung up about its edge since the last rise,--pitch pines, birches, alders, aspens, and others,--and, falling again, leaves an unobstructed shore; for, unlike many ponds and all waters which are subject to a daily tide, its shore is cleanest when the water is lowest. On the side of the pond next my house a row of pitch pines, fifteen feet high, has been killed and tipped over as if by a lever, and thus a stop put to their encroachments; and their size indicates how many years have elapsed since the last rise to this height. . . . When the water is at its height, the alders, willows, and maples send forth a mass of fibrous red roots several feet long from all sides of their stems in the water, and to the height of three or four feet from the ground, in the effort to maintain themselves; and I have known the high blueberry bushes about the shore, which commonly produce no fruit, bear an abundant crop under these circumstances. (II, 201-202)

¹⁰Deevey, p. 6.

The passage is interesting because it records with detail the results of a slowly occurring phenomenon. Thoreau notes the size of the pitch pines as biological indicators of the date of the last rise in water, and he reports the responses of various plants to an increase in this one environmental factor: the trees send forth subsidiary roots, trying to support themselves, and the blueberry bushes, higher up the shore, flourish with the extra water, bearing fruit. Thoreau thus observes not only the general effect of the rise in waters--the killing of vegetation--but also particular reactions by plants to this upset in, or bounty of, their environment. In all, Thoreau shows a reasonably sophisticated ecological perspective. As for the symbolic use of Thoreau's ecology, this becomes evident in his idealization of the pond. Sherman Paul states: "That the pond was the real self and the shore the empirical self was made clear in the chapter on 'The Ponds.'"¹¹ Walden's low biological productivity (and thus its clarity) and its fluctuation in volume, with the consequent ecological effects, both contribute to its symbolization as the real self. Because Walden contains less organic matter than other ponds, it seems more spiritual, more sublime. While a sterile space of shore usually divides Walden from the vegetation of the land, its water occasionally rises to act upon the land; so too the real self is capable of altering the empirical self. Thus, the ecological

¹¹ Paul, p. 333.

attributes of Walden Pond lend themselves to Thoreau's symbolic designs. But preceding any process of symbolization, of course, is Thoreau's ecologic perceptivity.

Thoreau's ecological perspective, then, connects his comments on nature and gives depth to the symbolic meaning of Walden. Throughout the book Thoreau can be seen to examine the factors affecting an organism's, in particular man's, survival--clothing, fuel, food, and shelter. Thoreau stresses that nature is a perpetually functioning system. By looking at both man and nature ecologically, Thoreau provides a common basis for his social criticism and nature observation. His ecological perspective shows both the intricacy of the natural world and how man relates to that world. In addition, Thoreau tries to bring men psychologically closer to nature: his own involvement in the functioning of nature is emotional as well as physical. On the psychological plane many of Thoreau's perceptions of nature's workings also symbolize aspects of human life. Indeed, Charles Anderson states:

What is the true human-animal relationship for Thoreau, the final application of all this imagery in Walden to man's life? The whole book is a quest for the most important of all animals, not named in the text but being sought there--man in his complete fulfillment. Hence, when the narrator goes out to explore the world of his "Brute Neighbors," he is really hunting for his Self.¹²

¹²Anderson, p. 184.

Consequently, the processes of nature correspond to those of the human spirit. The renewal of life in spring is as much moral as substantial. But neither Thoreau's ecology nor his symbolism is subjugated one to the other; each operates lucidly and forcibly at its own level. Walden is at once a picture of Thoreau's life in nature, an attempt to define man's relation to nature, a study of the mechanism of nature, an exhortation to the human spirit, and a symbolic drama of the fulfillment of self. In Walden, Thoreau mediates successfully between symbolic and materialistic modes of vision, between transcendental meditation and ecological presentation, by grounding the former on an analysis of fundamental natural relations. Walden is a brilliant symbolic and ecologic synthesis.

Chapter III--Ecological Applications

The synthesis of vision attained in Walden is not present in Thoreau's other works. The remaining travel narratives and nature essays to be discussed again demonstrate his ecological perspective, but they either lack symbolic dimension or do not thoroughly integrate their symbols with their natural history. Indeed, a book like Cape Cod or an essay like "Wild Apples" may be viewed as an instance of Thoreau's applying an ecological viewpoint to a place or a subject. This is not to delimit these works as scientific studies--far from it, for they are also rambling travel accounts and philosophic meditations. But this is to emphasize that Thoreau's approach to the land and natural phenomena is primarily ecologic. This ecological perspective leads to a more or less coherent account of man and nature in Thoreau's later writings.¹

¹ A Yankee in Canada, it must be admitted, belies the all-inclusiveness of the above assertions. The essay, parts of which were published in Putnam's Monthly for January, February, and March of 1853 and the whole of which was collected posthumously in 1866, explores Canadian society more than it does the land. Two reasons account for Thoreau's focus in the essay. First, Thoreau travelled often through an urbanized or at least long-settled territory on his Canadian trip; most of the nature he saw had been domesticated. Thus, the vital relationships between man and nature that interest Thoreau and that form the bulk of his statements on human ecology were generally absent. While he clearly longed to see the wilderness areas of Canada, the brevity of his excursion limited him to the populated shores of the St. Lawrence River. Second, Thoreau found the differences in custom and settlement between French Canada and America engaging. The Church, the Military, and the Feudal Land System were the chief shaping forces on Canadian life; the examination of these institutions, rather than the environment, offered the best chance of understanding the country. Both the opportunity for and the inclination towards a consistent ecological perspective, therefore, were lacking in Thoreau's trip north in 1850.

Ecological perceptivity is most prevalent in Cape Cod. Based on Thoreau's trips to the Cape in 1849, 1850, and 1855, the book was published, in part, in Putnam's Monthly during the summer of 1855 and, in its entirety, in 1865. Cape Cod is a picture of a fascinating but hostile environment. Thoreau is absorbed in the rigors of life on both sea and shore. He sees, as Sherman Paul states, that "Men were not subdued on the Cape; they had persevered in the face of the encroaching sea and the shifting sands."² Through his ecological observations Thoreau makes clear the nature of life on Cape Cod.

Thoreau observes that the sea is the principal feature of the lives of Cape Cod residents. "Everything told of the sea, even when we did not see its waste or hear its roar" (IV, 32), he says. It is both the provider and destroyer of life.

Fundamentally, the sea is a hostile environment.¹ As Thoreau's repeated references to shipwrecks--those of the St. John, the Franklin, and of a schooner carrying lumber--and the destruction of the iron lighthouse illustrate, the power of the sea is enormous, man contests with tides and waves at his peril (e.g. IV, 6-13, 73, 108, 163, 259-60, 264). In addition to human corpses the sea casts up marine creatures along the shore. Thoreau finds sea-jellies and large clams strewn on the beach after a storm (IV, 70, 72-73).

²Paul, p. 386.

And, of course, the sea is the stronghold of wildness:

"The ocean is a wilderness reaching round the globe, wilder than a Bengal jungle, and fuller of monsters, washing the very wharves of our cities and the gardens of our seaside residences" (IV, 188). Man cannot check the savage predation in the sea and may even be a victim himself. "They will tell you tough stories of sharks all over the Cape" (IV, 112), Thoreau reports. Yet, as Sherman Paul points out, ". . . Thoreau accepted death, as the inhabitants of the Cape did, with a certain matter-of-fact inevitability, as a part of the economy of daily life and nature."³ The sea also transforms the land, adding a sandbar to the Cape at one place, eroding the shore at another, often with biological consequences. Thoreau records, for example, this singular incident:

I saw in Cohasset, separated from the sea only by a narrow beach, a handsome but shallow lake of some four hundred acres, which, I was told, the sea had tossed over the beach in a great storm in the spring, and, after the alewives had passed into it, it had stopped up its outlet, and now the alewives were dying by thousands, and the inhabitants were apprehending a pestilence as the water evaporated. (IV, 17)

Yet if the sea takes life, it is also the source of life for Cape Cod. Not only is the sea the place of evolutionary origin for all earthy life (as Thoreau, quoting Darwin, Agassiz, and other biologists, asserts), but also is it the supplier of

³Paul, p. 382.

food for man (IV, 127-128). Nearly all Cape Cod men fish for a living, drying and selling their salted catches. Besides fish, the sea also provides driftwood, which supplements the wood Cape Codders import for construction and fuel. "After an easterly storm in the spring," Thoreau writes, "this beach is sometimes strewn with Eastern wood from one end to the other, which, as it belongs to him who saves it, and the Cape is nearly destitute of wood, is a godsend to the inhabitants" (IV, 58-59). Even seaweed is gathered by Cape residents, who use it for manure (IV, 10-11). Time and again Thoreau meets men foraging along the beach. Finally, Thoreau notes that the sea supplies new plants to the land. As he does frequently in his Journal, Thoreau speculates on a mechanism of seed dispersal:

A man travelling by the shore near there not long before us noticed something green growing in the pure sand of the beach, just at high-water mark, and on approaching found it to be a bed of beets flourishing vigorously, probably from seed washed out of the Franklin. Also beets and turnips came up in the seaweed used for manure in many parts of the Cape. This suggests how various plants may have been dispersed over the world to distant islands and continents. Vessels, with seeds in their cargoes, destined for particular ports, where perhaps they were not needed, have been cast away on desolate islands, and though their crews perished, some of their seeds have been preserved. Out of many kinds a few would find a soil and climate adapted to them,--become naturalized and perhaps drive out the native plants at last, and so fit the land for the habitation of man. It is an ill wind that blows nobody any good, and for the time lamentable shipwrecks may thus contribute a new vegetable to a continent's stock, and

prove on the whole a lasting blessing to its inhabitants. Or winds and currents might effect the same without the intervention of man. (IV, 166)

From a few chance observations Thoreau draws out the means and ecological implications of introducing new plant species to a foreign environment.

These are the intricate relations of life with the sea on Cape Cod. The sea is both friend and foe, both livelihood and death dealer for the Cape. Men and other organisms survive by reaping whatever bounty it provides and by trying to avoid its dangers.

Cape Cod itself offers much the same paradox: though a severe environment, it still supports life. Wind and sand are prime facts of Cape Cod existence. Of the former Thoreau writes (observing how vegetation exploits a slight human modification of the environment): ". . . we passed through a graveyard, which apparently was saved from being blown away by its slates, for they enabled a thick bed of huckleberry bushes to root themselves amid the graves" (IV, 148). Of the latter he states:

The barren aspect of the land would hardly be believed if described. It was such soil, or rather land, as, to judge from appearances, no farmer in the interior would think of cultivating, or even fencing. Generally, the plowed fields of the Cape look white and yellow, like a mixture of salt and Indian meal. This is called soil. All an inlander's notions of soil and fertility will be confounded by a visit to these parts, and he will not be able, for some time afterward, to distinguish soil from sand. (IV, 36)

Finding the Clay Pounds a slightly more fertile area, Thoreau observes: ". . . this fertility must be owing mainly to the abundance of moisture in the atmosphere, for what little grass there was was remarkably laden with dew in the morning, and in summer dense imprisoning fogs frequently last till midday . . ." (IV, 165). Thus he accounts for the quality of the vegetative cover by the abundance or dearth of a given environmental factor. For the most part, however, the Cape is sandy and windy, with the result that, at best, dwarfed trees grow. Thoreau takes particular note of these:

The trees were, if possible, rarer than the houses, excepting apple trees, of which there were a few small orchards in the hollows. These were either narrow and high, with flat tops, having lost their side branches, like huge plum bushes growing in exposed situations, or else dwarfed and branching immediately at the ground, like quince bushes. They suggested that, under like circumstances, all trees would at last acquire like habits of growth. I afterward saw on the Cape many full-grown apple trees not higher than a man's head; one whole orchard, indeed, where all the fruit could have been gathered by a man standing on the ground; but you could hardly creep beneath the trees. (IV, 32-33)

And perceiving similarities in environment, he adds later concerning these groves: "You would frequently think, from the character of the surface, the dwarfish trees and the bearberries around, that you were on the top of a mountain" (IV, 129). Thoreau is thus acutely aware of the shaping force of the Cape environment on plant vitality and growth and its resemblance to alpine conditions. Another common

form of vegetation that indicates markedly the effect of the wind is poverty grass:

In summer, if the poverty-grass grows at the head of a Hollow looking toward the sea, in a bleak position where the wind rushes up, the northern or exposed half of the tuft is sometimes all black and dead like an oven broom, while the opposite half is yellow with blossoms, the whole hillside thus presenting a remarkable contrast when seen from the poverty-stricken and the flourishing side.
(IV, 135)

Yet another plant upon which Thoreau remarks is beach grass. He observe that it provides a record of the formation of the sand dune in which it grows:

The grass roots itself very firmly. When I endeavored to pull it up, it usually broke off ten inches or a foot below the surface, at what had been the surface the year before, as appeared by the numerous offshoots there, it being a straight, hard, round shoot, showing by its length how much the sand had accumulated the last year; and sometimes the dead stubs of a previous season were pulled up with it from still deeper in the sand, with their own more decayed shoot attached,-- so that the age of a sand-hill, and its rate of increase for several years, is pretty accurately recorded in this way. (IV, 205-206)

Thus, beach grass chronicles the severity of its environment. Perhaps the hostility of the land, however, is summed up in the following passage:

The seashore is a sort of neutral ground, a most advantageous point from which to contemplate the world. . . . Creeping along the endless beach amid the sun-squawl and the foam, it occurs to us that we, too, are the product of sea-slime.

It is a wild, rank place, and there is no flattery in it. Strewn with crabs, horse-shoes, and razor-clams, and whatever the sea casts up, --a vast morgue, where famished dogs may range in packs, and crows come daily to glean the pittance which the tide leaves them. The carcasses of men and beasts together lie stately up upon its shelf, rotting and bleaching in the sun and waves, and each tide turns them in their beds, and tucks fresh sand under them. There is naked Nature, --inhumanly sincere, wasting no thought on man, nibbling at the cliffy shore where gulls wheel amid the spray. (IV, 186-187)

Thoreau understands the indifference of nature to the life of any organism. His picture of Cape Cod shows the struggle for survival in, and the adaptations of organisms to, an unrelenting environment.

Not surprisingly, since they live in harsh surroundings, the inhabitants of Cape Cod are enterprising in the utilization of the resources they do have. Until it became uneconomical, Thoreau reports, they extracted salt from seawater (IV, 23), they used to kill gulls and songbirds (IV, 71-72), and they made their own candles from bayberries (IV, 102-103). Their current use of resources includes the harvesting of clams on the shore (IV, 35), the killing of schools of blackfish for their oil (IV, 142-146), the growing of corn (IV, 37-38), the successful planting of pines on otherwise barren tracts in Barnstable county (IV, 22, 138), the raising of cranberries in swamps (IV, 197), and even the pruning of treetops for fuel (IV, 203). Of their agriculture in general, Thoreau writes:

It is sufficiently remarkable that any crops can be raised here, and it may be owing, as others have suggested, to the amount of moisture in the atmosphere, the warmth of the sand, and the rareness of frost. . . . Probably the inhabitants are contented with small crops from a great surface easily cultivated. It is not always the most fertile land that is the most profitable, and this sand may repay cultivation as well as the most fertile bottoms of the West. . . . Their gardens are commonly little patches that have been redeemed from the edges of the marshes and swamps. (IV, 39-40)

Thus, Thoreau reports the ecological observations of others and perceives himself the physical limitations and advantages of the land and the accommodation of the inhabitants to it.

Of course, Cape Codders have often abused their environment in the process of fully utilizing its scant resources. Thoreau reports that clams are not as plentiful as previously and states excessive gathering as the main reason:

Probably the clam-ground has been stirred too frequently Nevertheless, one man, who complained that they fed pigs with them and so made them scarce, told me that he dug and opened one hundred and twenty-six dollars' worth in one winter, in Truro" (IV, 36)

He observes that, in the past, much erosion of the Cape has been due directly to man: "Formerly, the cows were permitted to go at large, and they ate many strands of the cable by which the Cape is moored, and well-nigh set it adrift . . . but now they are not permitted to wander" (IV, 209). Indeed, the government even pays for the planting of beach grass to halt the shifting sands (IV, 208). Thoreau notes the destruction

as early as 1770, of the oysters native to Massachusetts Bay, probably due to the pollution of decaying carcasses of blackfish, which the Cape Codders had killed and stripped of their blubber (IV, 82-83). Incidentally, witnessing such a slaughter of blackfish, Thoreau recommends that the corpses "might be made into guano, and Cape Cod is not so fertile that her inhabitants can afford to do without this manure,--to say nothing of the diseases they may produce" (IV, 146).

Thoreau is thus keenly aware of the interrelation of Cape Cod and its inhabitants. He warns against the tendency to exploitation but applauds a consistently efficient, economical use of resources. He sees that the qualities of efficiency and stability in man, animal, and plant permit survival on Cape Cod. One critic, however, castigates Thoreau for lack of what amounts to ecological sensitivity. Edward Hinckley states:

In brief, Thoreau never entered into the life of his fellows, and therefore can not understand the sort of environment which influences a man's life. The Cape Coddler depends on his native soil and his native waters; without them, he is not; removed from them, even in the mind of a strolling litterateur, or conceived apart from them and not rather viewed as a product of them, and they as the fit surroundings for him, he is inevitably an anomalous and misunderstood miracle. There is a sneer in all Thoreau's condescending consideration of the native Cape individual; there is no word of approval or genuine appreciation of the life or the people.⁴

⁴ Edward B. Hinckley, "Thoreau and Beston: Two Observers of Cape Cod," New England Quarterly, 4 (1931), 221.

While Thoreau may not be humanistic enough for Hinckley (for he does seem to remain scientifically detached), by now sufficient examples should have made clear that Thoreau perceives quite distinctly the ecologic interrelations functioning on the Cape and he fulfills the goal set at the beginning of his book--"I did not see why I might not make a book on Cape Cod, as well as my neighbor on 'Human Culture.' It is but another name for the same thing, and hardly a sandier phase of it" (IV, 3). Thoreau realizes that human life on Cape Cod is possible only by intimate involvement with nature and that the Cape Codder is moulded by this involvement. As John J. McAleer points out,

On Cape Cod he found a people who were, almost out of necessity, specimens of life as it should be when lived in closest concert with Nature. . . . The character of the people is formed by the antics of an ocean which is shifting their foothold constantly under them; a viable land suitable to viable contact with Nature; a focus of forces, ocean and land closing in contention and human nature honed razor-sharp between them.⁵

In Cape Cod, then, through an ecological perspective, Thoreau sees the essential drama of Cape life--the struggle for survival of every organism in that environment. By presenting the ecologic realities of Cape Cod in conjunction with the account of his tour, Thoreau gives a unity of vision to his book and grasps the fundamental meaning of the Cape.

⁵ John J. McAleer, "Thoreau's Epic 'Cape Cod,'" Thought, 43 (1968), 234.

"Chesuncook," the story of a moose hunting trip in Maine in 1853, reveals a much different ecological focus from Cape Cod. First published in the Atlantic Monthly for June, July, and August of 1858, the essay contains Thoreau's most explicit appeal for conservation. As Sherman Paul has suggested, the essay attempts to answer the question "if primitive nature and civilization are contemporary in America, how should one use nature?"⁶

Mentally comparing Maine to Concord, Thoreau is particular to point out the distinctiveness of the wilderness and man's impact upon it. Near the beginning of "Chesuncook," for example, Thoreau notes how one plant has extended its range, because of man, by dispossessing native species: "The Canada thistle, an introduced plant, was the prevailing weed all the way to the lake, the roadside in many places, and fields not long cleared, being densely filled with it as with a crop, to the exclusion of everything else" (III, 96). On the other hand, the type of vegetation that Thoreau sees for the most part still distinguishes the wilderness of Maine from long-settled territory: "There were also whole fields full of ferns, now rusty and withering, which in older countries are commonly confined to wet ground. There were few flowers, even allowing for the lateness of the season" (III, 96-97). Thus, Thoreau briefly describes differing plant communities to contrast the primitive forest of Maine with the inroads of civilization.

⁶Paul, p. 362.

The same consciousness of change is evident in Thoreau's account of the ways of life in the woods. As in "Ktaadn," he notes how the land is cleared for settlement: the trees felled and then burned (III, 119-20), and he admires the natural style of pioneer houses, made of whole logs with "lichens and mosses and fringes of bark" (III, 139) still clinging to them. But if one pioneer's house accommodates itself to the wilderness, it is nevertheless "the first rude beginnings of a town" (III, 144) and forbodes the transformation of the landscape. Thoreau reports:

They spoke of the practicability of a winter road to the Moosehead Carry, which would not cost much, and would connect them with steam and staging and all the busy world. I almost doubted if the lake would be there,--the self-same lake,--preserve its form and identity, when the shores should be cleared and settled; as if these lakes and streams which explorers report never awaited the advent of the citizen.
(III, 144)

With this sense of impending destruction, Thoreau views man's actions in the woods. He finds grounds for his anxiety about the survival of the environment in the crass attitudes of the hunters and lumbermen that he meets. He consistently contrasts the natural and the "civilized," the life of the forest and man's activities there.

Though part of a sportsman's moose hunting expedition, a civilized, artificial invasion of the forest, Thoreau does not accompany his friends on further hunts once they have killed one moose and he has examined it. His specific

ecological observations concerning the animal are minimal. As in "Ktaadn," he mentions the increase in the moose population from what it was thirty years ago (III, 153-154), though he does not this time discuss its cause. He particularly points out, however, the favorite habitat of moose and where they are most abundant--"a small bay, or pokelogan, as it is called, bordered by a strip of meadow, or separated from the river by a low peninsula covered with coarse grass, wool-grass, etc., wherein they . . . eat the pads" (III, 109).

But Thoreau's guilt over his participation in the hunt overrides his scientific interests, and he states:

This afternoon's experience suggested to me how base or coarse are the motives which commonly carry men into the wilderness. The explorers and lumberers generally are all hirelings, paid so much a day for their labor, and as such they have no more love for wild nature than wood-sawyers have for forests. Other white men and Indians who come here are for the most part hunters, whose object is to slay as many moose and other wild animals as possible. . . . For one that comes with a pencil to sketch or sing, a thousand come with an axe or rifle. What a coarse and imperfect use Indians and hunters make of Nature! No wonder that their race is so soon exterminated. (III, 133)

In "Chesuncook," as the above passage shows, Thoreau approaches Albert Schweitzer's philosophy of "reverence for life."

Thoreau is explicit a few paragraphs later when he declares:

"Every creature is better alive than dead, men and moose and pine trees, and he who understands it aright will rather

preserve its life than destroy it" (III, 135). Of course, such an opinion hardly agrees with ecological reality and is contradicted, moreover, by Thoreau himself when he admits: "I could spend a year in the woods, fishing and hunting just enough to sustain myself, with satisfaction" (III, 132). Thoreau is forced into an extreme appeal for preservation, it seems, because of the ruthless exploitation of resources that he witnesses. Market hunting of game, hunting for hides and for sport, and extensive lumbering all threaten the existence of the wilderness. Thoreau counters this concentration on materialistic utilization of the Maine woods with a claim for aesthetic utilization:

Strange that so few ever come to the woods to see how the pine lives and grows and spires, lifting its evergreen arms to the light,--to see its perfect success; but most are content to behold it in the shape of many broad boards brought to market, and deem that its true success! But the pine is no more lumber than man is and to be made into boards and houses is no more its true and highest use than the truest use of a man is to be cut down and made into manure. (III, 134)

Lew Dietz misses Thoreau's point when he states: "What he failed to understand was that the great pines were as mortal as he; they were even then overmature and their years, as his, were numbered."⁷ Thoreau does not simply oppose the cutting of pines; he opposes man's shaping presence in the wilderness, even if it only hastens inevitable natural changes;

⁷Lew Dietz, The Allegash (New York: Holt, Rinehart, and Winston, 1968), p. 162.

he opposes an exclusively economic view of the landscape and the dismissal of its other uses.

In the conclusion of "Chesuncook," Thoreau describes the fundamental ecology of the Maine woods and the ease with which man upsets it:

Humboldt has written an interesting chapter on the primitive forest, but no one has yet described the difference between that wild forest which once occupied our oldest townships, and the tame one which I find here to-day. It is a difference which would be worth attending to. The civilized man not only clears the land permanently to a great extent, and cultivates open fields, but he tames and cultivates to a certain extent the forest itself. By his mere presence, almost, he changes the nature of the trees as no other creature does. The sun and air, and perhaps fire, have been introduced, and grain raised where it stands. It has lost its wild, damp, and shaggy look; the countless fallen and decaying trees are gone, and consequently that thick coat of moss which lived on them is gone too. The earth is comparatively bare and smooth and dry. The most primitive places left with us are the swamps where the spruce still grows shaggy with usnea. The surface of the ground in the Maine woods is everywhere spongy and saturated with moisture. I noticed that the plants which cover the forest floor there are such as are commonly confined to swamps with us . . .; and the prevailing aster there is Aster acuminatus, which with us grows in damp and shady woods. (III, 167-68)

Thoreau perceives distinctly the process by which man can change the character of the forest simply by altering the proportion of given environmental factors. The forest community in Maine, Thoreau sees, is sustained by an abundance of water, and human methods of cultivation and civilization tend to dissipate such reserves of water, resulting in the destruction of primitive nature.

While acknowledging that the wilderness is necessary "for a resource and a background, the raw material of all our civilization" (III, 172), Thoreau wishes to keep a part of it in its natural condition. He argues:

Why should not we . . . have our national preserves, where no villages need be destroyed, in which the bear and panther, and some even of the hunter race, may still exist, and not be 'civilized off the face of the earth,'--our forests . . . not for idle sport or food, but for inspiration and our own true recreation? or shall we, like the villains, grub them all up, poaching on our own national domains? (III, 173)

Conservation, then, is the focus of "Chesuncook." The account of the hunting trip, the comments on man's activities in the woods, all form part of a plea for preservation of a representative sample of wilderness. Thoreau's ecological perspective--his alertness to man's impact upon the environment, an impact readily observable by comparing Concord to Maine--prompts him to make this early nineteenth-century defence of wild America.

In "Allegash and East Branch," written during the summer of 1857 but unpublished till 1865, Thoreau's ecological perspective fails to give unity to the essay. His observations range variously from plant distribution to lumbering to Indian woodcraft.

Many of Thoreau's ecologic perceptions in "Allegash and East Branch" concern the distribution of vegetation. For example, climbing Mt. Kineo, he notes the effects of latitude

and altitude on the growth of plants:

The plants which chiefly attracted our attention on this mountain were the mountain cinquefoil (Potentilla tridentata), abundant and in bloom still at the very base, by the water-side, though it is usually confined to the summits of mountains in our latitude Spiranthea cernua, at the top; bunchberry reddening as we ascended, green at the base of the mountain, red at the top
(III, 196)

Thoreau perceives that differences in elevation correspond to differences in latitude and account for varying rates of plant growth. He also observes that many species of trees grow in clumps and that man takes advantage of this pattern of distribution:

You do not find straggling trees of this species [larch] here and there throughout the wood, but rather a little forest of them. The same is the case with the white and red pines, and some other trees, greatly to the convenience of the lumberer. They are of a social habit, growing in 'veins,' 'clumps,' 'groups,' or 'communities,' as the explorers call them, distinguishing them far away, from the top of a hill or tree, the white pines towering above the surrounding forest, or else they form extensive forests by themselves. (III, 231-32)

Finally, Thoreau records the abundance of berry bearing plants on the carries and the reasons for their growth there:

So surely as we stepped out of the canoe and stretched our legs we found ourselves in a blueberry and raspberry garden, each side of our rocky trail around the falls being lined with one or both. There was not a carry on the main East Branch where we did not find an

abundance of both these berries, for these were the rockiest places, and partially cleared, such as these plants prefer
(III, 305)

Thoreau thus carries into the Maine woods what is a constant preoccupation in his Journal--the relation of a plant's habitat to its growth.

Besides the processes of growth, Thoreau observes those of decay. "I could trace the outlines of large birches that had fallen long ago, collapsed and rotted and turned to soil, by faint yellowish-green lines of feather-like moss, eighteen inches wide and twenty or thirty feet long, crossed by other similar lines" (III, 224), he writes, taking note of the cycle of life in the forest.

A major portion of "Allegash and East Branch," like Thoreau's other essays about the Maine woods, concerns man's attitude towards and impact upon the wilderness. Observing that the lakes on which he is canoeing have no natural sandy or rocky shore but only a border of dead trees, Thoreau states that this is the result of damming the outlets of the lakes. He expatiates:

They have thus dammed all the larger lakes, raising their broad surfaces many feet; Moosehead, for instance, some forty miles long, with its steamer on it; thus turning the forces of nature against herself. They rapidly run out of these immense forests all the finer, and more accessible pine timber, and then leave the bears to watch the decaying dams, not clearing nor cultivating the land, nor making roads, nor building houses, but leaving it a wilderness as they

found it. In many parts, only these dams remain, like deserted beaver-dams. Think how much land they have flowed, without asking Nature's leave! (III, 251-52)

Thoreau protests the rape of the land, the disruption of the forest ecosystem for marketable lumber. He is willing to tolerate settlement of the wilderness but not simply its destruction and neglect. He reports that another result of the flooding, according to his Indian guide, is the frightening away of the cariboo (III, 259). Thus, Thoreau records the ecological ramifications of an exploitative treatment of nature. His contempt for the plunderers of nature is evident in his account of logging practices:

The wilderness experiences a sudden rise of all her streams and lakes. She feels ten thousand vermin gnawing at the base of her noblest trees. Many combining drag them off, jarring over the roots of the survivors, and tumble them into the nearest stream, till, the fairest having fallen, they scamper off to ransack some new wilderness, and all is still again. It is as when a migrating army of mice girdles a forest of pines. The chopper fells trees from the same motive that the mouse gnaws them,--to get his living. . . . He speaks of a 'berth' of timber, a good place for him to get into, just as a worm might. (III, 252)

Thoreau finds the same disregard for the value of the wilderness in the behavior of the game wardens, whose job is to regulate the hunting of moose:

. . . the moose wardens are not very particular. I heard quite directly of one who being asked by a white man going into the woods what he would say if he killed

a moose, answered, 'If you bring me a quarter of it, I guess you won't be troubled.' His duty being, as he said, only to prevent the 'indiscriminate' slaughter of them for their hides. I suppose that he would consider it an indiscriminate slaughter when a quarter was not reserved for himself. Such are the perquisites of this office. (III, 231)

All man's actions affect the wilderness. They need not be of the magnitude of flooding lakes or diverting the flow of rivers through canals (III, 270) in order to change the face of nature. Thoreau tells of how odd appears a clearing, made by men for growing hay, in the middle of the forest: "This unnaturally smooth-shaven, squarish spot, in the midst of the otherwise uninterrupted forest, only reminded us how uninhabited the country was. . . . Such, seen far or near, you know at once to be man's work, for Nature never does it" (III, 258). Thoreau is acutely aware of any alteration in the fabric of nature. He sees man's shaping presence in the Maine woods and duly makes report of it.

But Joe Polis, Thoreau's Indian guide, is the center of Thoreau's interest in "Allegash and East Branch." Though Thoreau records some Indian wood lore, he is chiefly intent on probing Indian character. His account of the Indian's life in and use of nature is sketchy. Of course, he reports that Joe makes a more thorough use of native plants than does the white man. Joe offers to make tea from a different plant each day, naming creeping snowberry, Labrador tea, and hemlock leaves as possible ingredients (III, 227-28). Joe tells Thoreau

of edible plants, such as lily roots from which a soup may be made (III, 209, 317). He also claims to know "some medicinal use for every plant [Thoreau] could show him" (III, 259) and proves his claim when Thoreau tests him. Nor are the Indian's uses of nature limited to food and medicine, for Joe shows Thoreau other woodcraft. He identifies which spruce roots are best for stitching birch bark to make a canoe (III, 225); he lists the game he has hunted and lived on in the woods (III, 203); he makes a sugar bowl from birch bark (III, 224). All these incidents at least show the Indian's familiarity with nature and distinguish him from the white man. But the observations are too few to give full thematic unity to the essay. Joe's qualities--his lack of stoicism, his enthusiasm for woodcraft, his sense of humor, and his sociability--take precedence. Thoreau's inquiry into the Indian's personality, not his relationship with his environment, is what sustains "Allegash and East Branch."

This last Maine Woods essay, then, in addition briefly to mentioning a few ecological relationships among the plants of the forest and to commenting once again on man's course of destruction there, presents a cursory picture of the Indian's harmony with nature. While Thoreau's ecological perspective captures the distinction between the Indian's use and the white man's abuse of the wilderness, this remains a subsidiary theme in his portrait of the Indian.

"The Succession of Forest Trees," an address given to the Middlesex Agricultural Society and published in the New York Tribune for October 6, 1860, is Thoreau's preeminent ecological paper. As Kathryn Whitford has already considered it extensively,⁸ however, it will be dealt with but briefly here. Basically, the essay concerns the means by which one stand of pine replaces oak in a woodlot, or vice versa, when one or the other genus is cut down. Thoreau states that the trees grow from seeds dispersed in various ways:

I have no time to go into details, but will say, in a word, that while the wind is conveying the seeds of pines into hard woods and open lands, the squirrels and other animals are conveying the seeds of oaks and walnuts into the pine woods(V, 190)

Thoreau points out how the seedlings benefit at first from the shelter of the mature trees, but how competition between them later kills the seedlings, unless the older trees of a different species are cut down (V, 192). Time and again he dwells on the intimate relation of animals, abiotic environment, seeds, and full grown trees in effecting these reciprocal transitions in the forest community. Of course, as Whitford states, "The whole lecture is open to the charge of oversimplification But all the conditions and modifications of the pattern of change would have burdened the lecture with

⁸ K. Whitford, pp. 291-306, discusses how Thoreau thought succession occurs, the advantage of such knowledge, and whether this and Thoreau's other observations on woodlots deserve the title ecological. She compares Thoreau's statements on succession to a modern treatment of the subject and concludes that the similarities are readily apparent.

too much detail, too many qualifications."⁹ Thoreau's Journal, however, shows that he was aware of the subtle complexities in this process of secondary succession. What is noteworthy about "The Succession of Forest Trees" is that it is Thoreau's most sustained ecological study, derived from independent research, and shows clearly his appreciation of the intricate interweaving of the forces of nature.

"Autumnal Tints" also shows at its core a keen use of ecologic observation. Published posthumously in the Atlantic Monthly for October 1862, the essay contains ecological comments on the processes of life and death for trees and leaves. Thoreau praises the red maple for fulfilling its functions in nature:

It has faithfully discharged the duties of a maple there, all winter and summer, neglected none of its economies, but added to its stature in the virtue which belongs to a maple, by a steady growth for so many months, never having gone gadding abroad, and is nearer heaven than it was in the spring. It has faithfully husbanded its sap, and afforded a shelter to the wandering bird, has long since ripened its seeds and committed them to the winds, and has the satisfaction of knowing, perhaps, that a thousand little well-behaved maples are already settled in life somewhere.
(V, 260)

Despite the precious language, which is intended to draw out parallels with human life for the maple, the passage does give some idea of its ecological relations--its use as habitat and its means of dispersing seed. Thoreau's reflections on falling leaves are more explicitly ecological, concerning

⁹K. Whitford, p. 297.

the cycling of nutrients:

But Nature is not cluttered with them; she is a perfect husbandman; she stores them all. Consider what a vast crop is thus annually shed on earth! This, more than any mere grain or seed, is the greatest harvest of the year. The trees are now repaying the earth with interest what they have taken from it. They are discounting. They are about to add a leaf's thickness to the depth of the soil. This is the beautiful way in which Nature gets her muck We are all the richer for their decay. I am more interested in this crop than in the English grass alone or in the corn. It prepares the virgin mould for future cornfields and forests, on which the earth fattens.

.
 But they still live in the soil, whose fertility and bulk they increase, and in the forests that spring from it. They stoop to rise, to mount higher in coming years, by subtle chemistry, climbing by the sap in the trees; and the sapling's first fruits thus shed, transmuted at last, may adorn its crown, when, in after years, it has become the monarch of the forest. (V, 268-69)

Thoreau's understanding of the importance of leaf fall is profound. He grasps the magnitude of the event both in terms of the quantity of organic matter involved and the possibilities for future growth that it entails.

The applicability of these natural processes as symbols of the way human life should be, of course, is all too obvious. The self-fulfillment of the maple, the colorful demise of the leaves, with the suggestion of rebirth, are all meaningful for man, but Thoreau develops these meanings very overtly. Of the leaves, for example, he baldly states: "They teach us how to die" (V, 270). His clumsy attempt to extract

a lesson from his ecological perception only turns the latter into an exemplum, instead of a compelling symbol for men.

In addition, while an ecological discussion of falling leaves is central to "Autumnal Tints," Thoreau's ecological perspective is generally absent in the rest of the essay. Indeed, as Leo Stoller states, "Description, phenology, and mysticism are woven together in varying proportions and with differing emphases to produce a whole."¹⁰ Thoreau's ecologic observations, while important, do not unify the essay--they simply highlight one part.

In "Wild Apples," a more consistent ecological perspective tends to predominate, though Thoreau's overt moralizing again mars the essay. First published posthumously in the Atlantic Monthly for November 1862, "Wild Apples" provides a natural history of the wild apple tree. Thoreau discusses, in turn, its history, species, growth, fruit, appearance, harvesting, and distribution. Two themes that recur throughout the essay are the apple tree's ability to survive and its interrelations with the rest of nature.

Thoreau begins the essay by stating: "It is remarkable how closely the history of the apple tree is connected with that of man" (V, 290). As Sherman Paul points out, ". . . he

¹⁰Leo Stoller, "A Note on Thoreau's Place in the History of Phenology," Isis, 47 (1956), 180.

associated the apple with the history of man's use of nature"¹¹ From ancient times to his own day, Thoreau relates, man has used and praised the apple. Even the first inhabitants of Europe ate the fruit, and men introduced it into the new lands they settled. Thoreau observes:

It migrates with man, like the dog and horse and cow: first, perchance, from Greece to Italy, thence to England, thence to America; and our Western emigrant is still marching steadily toward the setting sun with the seeds of the apple in his pocket, or perhaps a few young trees strapped to his load. . . . for when man migrates, he carries with him not only his birds, quadrupeds, insects, vegetables, and his very sward, but his orchard also. (V, 292-93)

Speculating on the source and course of dispersal of the apple tree, Thoreau shows that man's movements assist the invasion of new territory by a whole range of species.

In the case of the apple tree, its invasion of North America proved beneficial for many native animals. Thoreau discusses at length how the tree is utilized for food and shelter by both livestock and wildlife:

The leaves and tender twigs are an agreeable food to many domestic animals, as the cow, horse, sheep, and goat; and the fruit is sought after by the first, as well as by the hog. Thus there appears to have existed a natural alliance between these animals and this tree from the first. . . .

Not only the Indian, but many indigenous insects, birds, and quadrupeds, welcomed the apple tree to these shores. The tent caterpillar

¹¹ Paul, p. 410.

saddled her eggs on the very first twig that was formed, and it has since shared her affections with the wild cherry; and the canker-worm also in a measure abandoned the elm to feed on it. As it grew apace, the bluebird, robin, cherry-bird, kingbird, and many more came with haste and built their nests and warbled in its boughs, and so became orchard-birds, and multiplied more than ever. It was an era in the history of their race. The downy woodpecker found such a savory morsel under its bark that he perforated it in a ring quite round the tree, before he left it,--a thing which he had never done before, to my knowledge. It did not take the partridge long to find out how sweet its buds were, and every winter eve she flew, and still flies, from the wood, to pluck them, much to the farmer's sorrow. The rabbit, too, was not slow to learn the taste of its twigs and bark; and when the fruit was ripe, the squirrel half rolled, half carried it to his hole; and even the musquash crept up the bank from the brook at evening, and greedily devoured it, until he had worn a path in the grass there; and when it was frozen and thawed, the crow and the jay were glad to taste it occasionally. The owl crept into the first apple tree that became hollow, and fairly hooted with delight, finding it just the place for him; so, settling down into it, he has remained there ever since. (V, 293-94)

But the apple tree is not simply the victim of extensive parasitism or the passive host in a commensal relationship. Dispersed by birds or cows, as Thoreau notes, its seeds compete successfully with those of other trees. Even on the rocky soil of the Easterbrooks Country, "they spring up wild and bear well there in the midst of pines, birches, maples, and oaks" (V, 299), Thoreau writes approvingly. The acclimatization of the apple tree to North America is complete:

Here on this rugged and woody hillside has grown an apple tree, not planted by man, no relic of a former orchard, but a natural

growth, like the pines and oaks. Most fruits which we prize and use depend entirely on our care. Corn and grain, potatoes, peaches, melons, etc., depend altogether on our planting; but the apple emulates man's independence and enterprise. It is not simply carried, as I have said, but, like him, to some extent, it has migrated to this New World, and is even, here and there, making its way amid the aboriginal trees
(V, 300-01)

As the comparison of the wild apple's to man's endurance indicates, Thoreau tries to make the tree (to use Sherman Paul's words) "a symbol of the virtue of the wild, of the 'spirited fruit' of his life in nature."¹² To this end Thoreau traces the difficult stages in growth of a specimen wild apple tree. Dispersed by cattle on rocky soil, "One or two of these [seeds], perhaps, survive the drought and other accidents,--their very birthplace defending them against the encroaching grass and some other dangers, at first" (V, 303). But annually oxen browse upon the young tree, forcing it into a peculiar form of growth:

. . . putting forth two short twigs for every one cut off, it spreads out low along the ground in the hollows or between the rocks, growing more stout and scrubby, until it forms, not a tree as yet, but a little pyramidal, stiff, twiggy mass, almost as solid and impenetrable as a rock. . . . They [such bushes] are more like the scrubby fir and black spruce on which you stand, and sometimes walk, on the tops of mountains, where cold is the demon they contend with, than anything else. (V, 303-04)

¹²Paul, p. 410, also claims that the wild apple is a personal symbol for Thoreau of his own life, but such an interpretation is possible only by recourse to biographical information--the meaning is not suggested by the essay itself.

Thoreau's comparison with mountain vegetation is apt; in both cases an environmental force, whether animate or inanimate, causes a phenotypic change in a plant. The wild apple, however, eventually surmounts its environmental limitation:

The cows continue to browse them thus for twenty years or more, keeping them down and compelling them to spread, until at last they are so broad that they become their own fence, when some interior shoot, which their foes cannot reach, darts upward with joy: for it has not forgotten its high calling, and bears its own peculiar fruit in triumph.

. . . Now, if you have watched the progress of a particular shrub, you will see that it is no longer a simple pyramid or cone, but that out of its apex there rises a sprig or two, growing more lustily perchance than an orchard-tree, since the plant now devotes the whole of its repressed energy to these upright parts. In a short time these become a small tree, an inverted pyramid resting on the apex of the other, so that the whole has now the form of a vast hour-glass. The spreading bottom, having served its purpose, finally disappears, and the generous tree permits the now harmless cows to come in and stand in its shade, and rub against and redden its trunk, which has grown in spite of them, and even to taste a part of its fruit, and so disperse the seed.

Thus the cows create their own shade and food; and the tree, its hour-glass being inverted, lives a second life, as it were. (V, 305-06)

Onto this tale of the wild apple tree's struggle for survival and final coexistence with other organisms, Thoreau clumsily grafts a human meaning. "What a lesson to man!" he exclaims;

So are human beings, referred to the highest standard, the celestial fruit which they suggest and aspire to bear, browsed on by fate; and only the most persistent and

strongest genius defends itself and prevails,
sends a tender scion upward at last, and drops
its perfect fruit on the ungrateful earth.
Poets and philosophers and statesmen thus
spring up in the country pastures, and outlast
the hosts of unoriginal men. (V, 307).

The moralizing is all very transparent. Beside the vivid ecological account of the wild apple, Thoreau's attempt to transform it into a symbol is pale. The tree appropriately represents the wildness and vitality of nature, but the application to man is somewhat strained. Thoreau fails sufficiently to integrate his natural and spiritual facts.

After commenting on the effects of wind and temperature on the ripened fruit, Thoreau concludes the essay by pointing out man's destruction of the wild apple. Thoreau notes that "temperance reform and the general introduction of grafted fruit" (V, 321) cause existing trees to be cut down and reduce the propagation of new ones. Thus the wild apple, though able to surmount other environmental pressures, faces extinction at the hands of man, the same hands that carried its domesticated forebears to North America.

Though Thoreau tries to link the wild apple with the wildness of the human spirit, his essay remains chiefly a celebration of the tree's ability to endure. "Wild Apples," which dramatizes the interrelation of one species with its environment, attests to Thoreau's knowing ecological perspective.

This perspective, serving to focus Thoreau's observations of nature, is an important unifying feature of many of his writings in the 1850's. While Thoreau's ecology occasionally succumbs to his other interests, such as the character of the Indian, in "Allegash and East Branch," or transcendental philosophizing, in "Autumnal Tints," in general it links his nature observations into a coherent pattern. Almost consistently Thoreau is attracted by the interaction of an organism, usually man, and its environment. The struggle for survival, the hostility of nature, the destruction of the landscape, these are his recurring themes. On the whole less interested in spiritual correspondences than in understanding the workings of nature, Thoreau probes the essence of wildness--elemental, animal, and human. With his ecological perspective, his interrelating eye, Thoreau looks for order in nature--and finds it.

Conclusion: Ecology and Thoreau

The origin, development, and consequences of Henry Thoreau's ecological perspective have been explored in the preceding pages. Perhaps a review and digest of the argument will distinguish vividly its various threads. In brief, the movement is from essays marked by intermittent ecologic observations to whole books informed by an ecological perspective.

In the 1840's transcendentalism is the shaping force on Thoreau's writing. Encouraging an ecological perspective with the concept of organic unity, the philosophy also undermines such a perspective with its idealistic emphasis. The result is that if Thoreau notes a functional relationship in nature he tries to make a spiritual correspondence out of it. Natural facts flower symbolically into spiritual truths. In essays like "A Walk to Wachusett" or "A Winter Walk" and in his first book, A Week on the Concord and Merrimack Rivers, Thoreau slights the value of his ecologic perceptions, however elementary they may actually be, for understanding nature in favor of drawing out from them transcendental meanings. Only in "Ktaadn," where Thoreau confronts the materiality of the wilderness, does he deal with man and nature in chiefly ecological terms.

But if transcendentalism preoccupies Thoreau in the 1840's, science preoccupies him in the 1850's. Concerning Thoreau's nature studies, Arthur Ekirch states:

In his study of the ways of nature Thoreau was particularly intrigued by its inter-relationships, the degree of harmony exhibited, and the methods by which nature conserved itself. Though he believed that the world was young and possessed of great wealth, he was indignant that his fellow men callously exploited and upset its natural balance by their wanton destruction of beauty and wildlife as well as physical resources.¹

Increasingly throughout the decade, in books like Cape Cod and in essays like "Chesuncook" and "Wild Apples," Thoreau looks at nature with a sharpened ecological perspective. These works both show a deepened understanding of the processes of nature, the interrelation of organisms and environment, and either lack symbolic dimension or subordinate it to a material view of the world. Indeed, Cape Cod is an ecological drama in which Thoreau concentrates on the means of living, for man and other organisms, in a hostile environment; "Chesuncook" is a plea for preservation of the wilderness, backed by an elucidation of the ways of life there. Displacing transcendentalism, Thoreau's ecological perspective exerts a formative force on both his themes and literary treatment of nature.

¹Arthur A. Ekirch, Jr., Man and Nature in America (New York and London: Columbia Univ. Press, 1963), p. 65.

Only in Walden does Thoreau balance between his transcendental and ecological perspectives. Though originating in his transcendental period, Walden was tempered by Thoreau's experiences at the pond and his subsequent interest in science. The result is a synthesis of vision: an ecological account of life in the woods and a symbolic drama of spiritual renewal.

Although transcendentalism and ecology have been contrasted in the preceding remarks, this does not mean that Thoreau ever abandoned one for the other or that his stressing of either is particularly valuable in itself. To echo Perry Miller, "Thoreau was both a Transcendentalist and a Natural Historian."² Nevertheless, the movement in Thoreau's writing is away from transcendental preaching to an ecological awareness of how nature operates, and it reaches its apogee in his most scientific report, "The Succession of Forest Trees," where he exhibits the fruits of personal research and years of thinking ecologically.

An ecological perspective, then, is present in varying degrees throughout Thoreau's nature and travel writing, his early works containing isolated ecologic perceptions and his later ones being steeped in a knowledge of the interrelationships that exist in nature. If symbolic depth is lost as

²Perry Miller, "Thoreau in the Context of International Romanticism," New England Quarterly, 34 (1961), 159 (Miller's italics).

Thoreau's ecology grows, then it is replaced by vital pictures of nature's workings. Whether there is a decline in literary value is debatable. Certainly Walden, which fuses symbolism and ecology, is Thoreau's most successful piece. As for his later writings, thematic coherence and complexity are at least the products of Thoreau's ecological perspective.

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