

Defending a Leopoldian Basis for Biodiversity: A Response to Newman, Varner, and Linquist

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Introduction

Quoting from my invitation to be a commentator in this session:

I know that you have been thinking quite seriously about the overlap between ecological science and conservation policy, which is what our book largely deals with. Also, we ended up taking a rather strong position against Leopold and especially his chief spokesperson, Baird Callicott. Given that you have been working on Leopold, and thinking about ways in which his ethical postulates might have a basis in contemporary ecology, it would be fantastic to hear your thoughts on what we say about those topics.

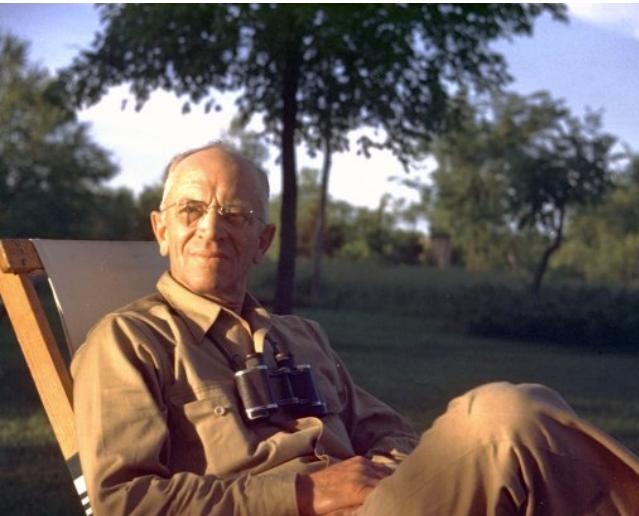
In *Defending Biodiversity*, Newman, Varner, and Linquist (**hereafter NVL**) assert:

From our critical discussion of Callicott on Leopold, we conclude that, philosophically speaking, Leopold's land ethic is weakly supported and, practically speaking, we think that *A Sand County Almanac* itself provides precious little guidance (p. 302).

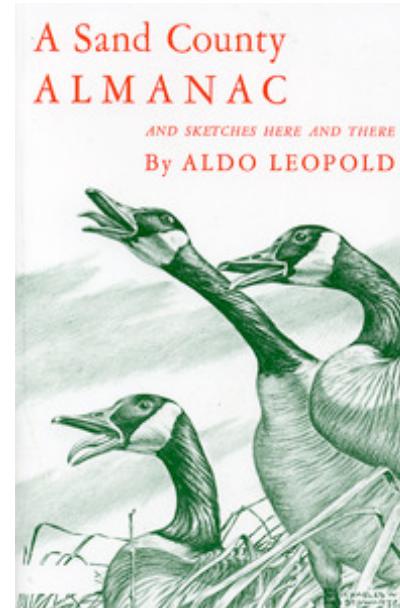
Introduction, cont.

What I will argue today is that the results of my ongoing project show:

1. There is a more accurate interpretation of Leopold that is not subject to the criticisms made by NVL.
2. Leopold's body of work as a whole, including *ASCA*, provides quite a bit of useful guidance and perspective.



Aldo Leopold



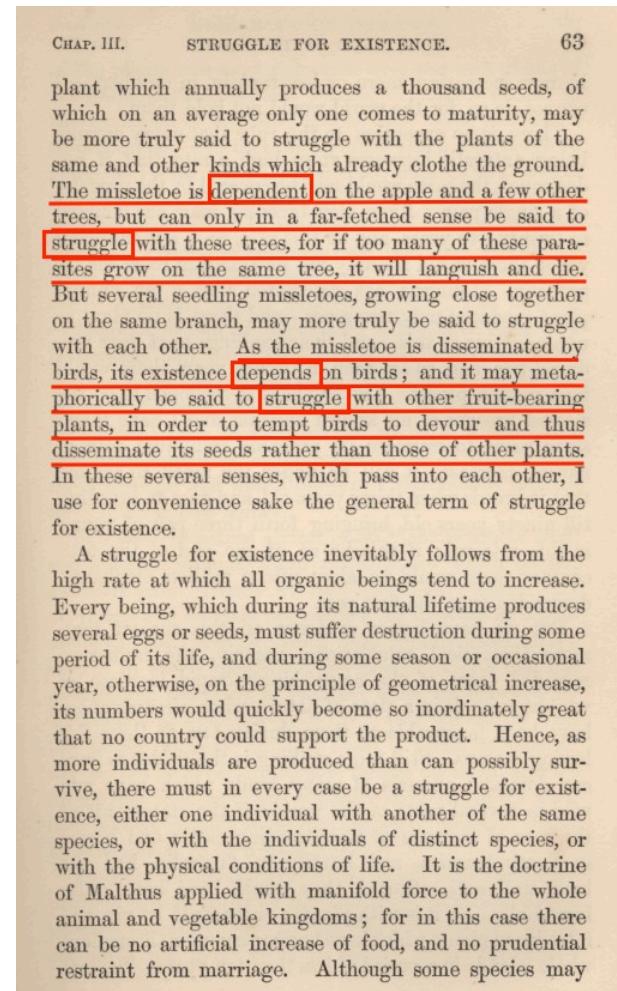
I begin with a brief summary of some of my work on Leopold so far – apologies that given time constraints the arguments are contained within the papers themselves.

Millstein's reinterpretation of Leopold's Land Ethic

1. 2015, "Re-examining the Darwinian Basis for Aldo Leopold's Land Ethic," *Ethics, Policy & Environment* 18: 301-317.

Argues **against Callicott's claim** that Leopold was committed to a view where the value of a land community is grounded in our extending moral sentiments to it; shows that there is scant textual evidence that Leopold was referencing Darwin's views about the evolution of ethics – and thus likewise **scant evidence for a Humean basis**.

Shows that there is **strong textual evidence** for the view that Leopold's reference to the struggle for existence was to Ch. 3 of the *Origin of Species*, titled "Struggle for Existence," where Darwin discusses the **interdependencies between species** – a central theme of "The Land Ethic" – at great length.

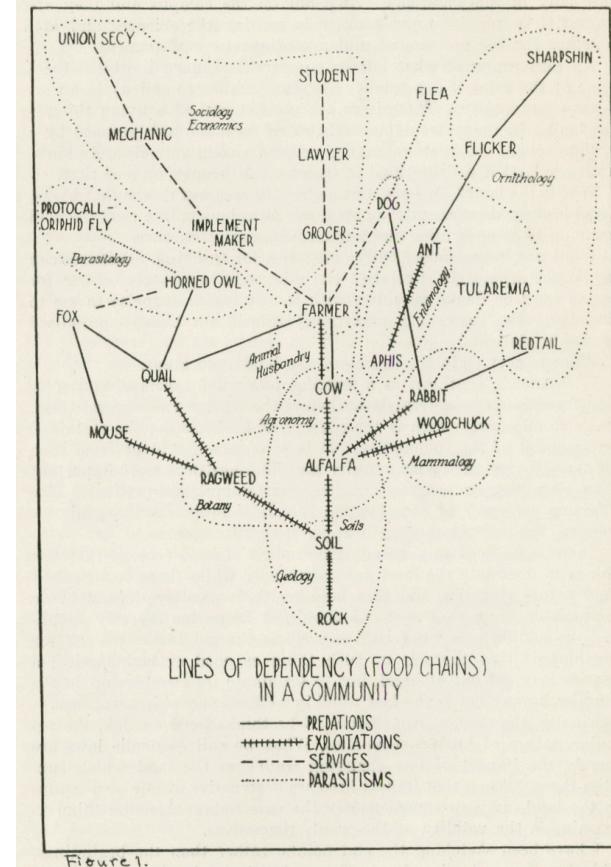


Millstein's reinterpretation of Leopold's Land Ethic, cont.

2. 2018, "Understanding Leopold's Concept of 'Interdependence' for Environmental Ethics and Conservation Biology," *Philosophy of Science* 85: 1127–1139.

Elaborates Leopold's conception of **interdependence** at the heart of the land ethic in line with contemporary ecology.

Argues that interdependencies are between both biotic and abiotic components and encompass both “negative” and “positive” ecological interactions (e.g., predator/prey, mutualist/mutualist).



From “The Role of Wildlife in a Liberal Education,” 1942

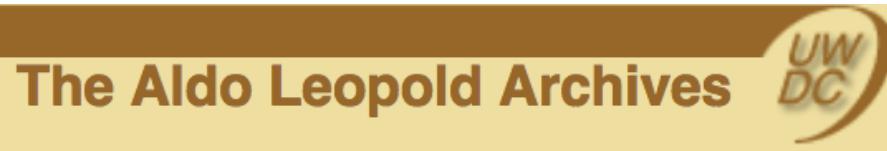
Millstein's reinterpretation of Leopold's Land Ethic, cont.

3. 2018, “**Debunking myths** about Aldo Leopold's land ethic,” *Biological Conservation* 217: 391-396.

Three of the six debunked myths:

- i. **Myth:** That there is a two-sentence “summary moral maxim” of the land ethic (“A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise” Leopold, 1949, 224–225).

Points out that these are **only two sentences in a lifetime of work** of a scientist/practitioner, not a philosopher; they read much differently when considered in context of his life and work (including the rest of “The Land Ethic”) rather than in isolation.



Leopold “published more than 500 articles, essays and reports and his papers contain at least 500 more unpublished essays, reports, and memoranda of significance.”

Millstein's reinterpretation of Leopold's Land Ethic, cont.

ii. Myth: Ecosystems are the only entities of value in the land ethic.

Argues that there is good evidence that Leopold's land ethic **values individual organisms** as well as ecological wholes (in agreement with Callicott's later work but in contrast to his early work).

iii. Myth: By **stability**, Leopold meant something like **balance** or **dynamic equilibrium**.

Argues that as Freyfogle (2008) points out, too many authors simply assume that Leopold meant by stability what other ecologists of his time meant. Instead, as Julianne Warren (2016) persuasively demonstrates, by **stability** Leopold meant something closer to **land health**.



"Dust Bowl," 1930s

Positive point: a correctly interpreted land ethic can be used to understand and justify successful restoration projects such as the Yolo Bypass in northern California's Sacramento Valley.

Millstein's reinterpretation of Leopold's Land Ethic, cont.

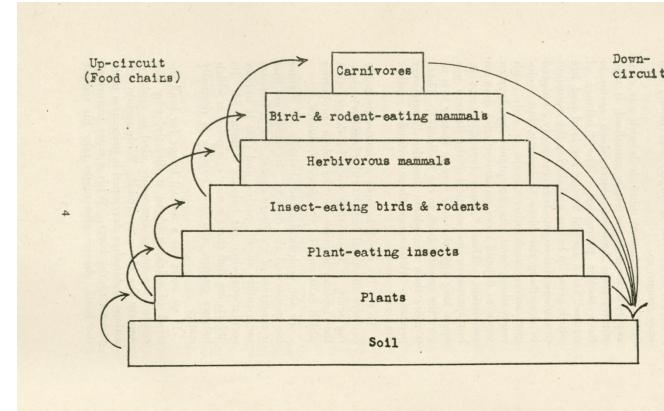
4. 2018, "Is Aldo Leopold's 'Land Community' an Individual?" in O. Bueno, R. Chen, and M. B. Fagan (eds.), *Individuation, Process, and Scientific Practices*, Oxford: Oxford University Press, 279-302.

Argues that Leopold's *land community* (aka *biotic community*) is:

- **not** the community concept of early 20th century ecologists such as Clements
- **not** the ecosystem concept of Tansley and subsequent ecologists
- rather, it **contains elements of both concepts** (interactions between species populations *and* matter/energy flows)

Shows that Leopold's land community concept is
consonant with much contemporary work in ecology.

Shows that the **boundaries of land communities can be delineated** by discontinuities in the strengths of interactions between species populations and matter/energy flows.



Biotic pyramid, showing plant and animal community as an energy circuit

Millstein's reinterpretation of Leopold's Land Ethic, cont.

In short, in these and other papers I:

- argue for alternative interpretations to the ones that Callicott has defended
- argue that Leopold's views are to a large extent consistent with contemporary ecology.

In what follows, I examine NVL's Chapter 10 first and then turn to Chapter 9.

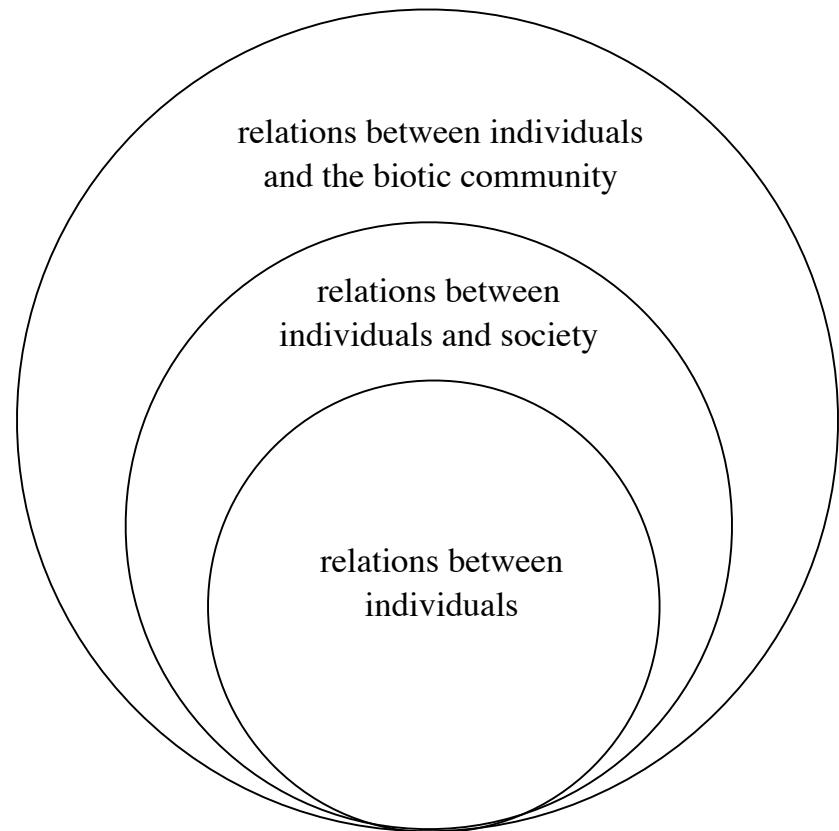


From *A Sand County Almanac*

7 NVL criticisms of Callicott's interpretation of Leopold (Ch. 10) & responses

1. **NVL criticism:** Leopold's land ethic espouses extreme holism, suggesting that individual organisms (including humans) should always be sacrificed for the good of the land community. It is therefore draconian or fascist.

Millstein response: Callicott no longer thinks this is the correct interpretation – as NVL acknowledge – and neither do I. Leopold speaks directly of the rights of individuals and talks of the land ethic as an “accretion” to previous ethical systems.



Leopold believed in an accretion of ethics over time

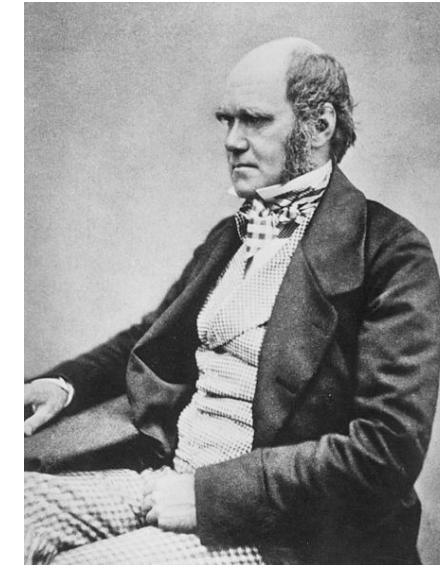
7 NVL criticisms of Callicott's interpretation of Leopold & responses, cont.

2. **NVL criticism:** Callicott **commits the fallacy of “appeal to authority”** by appealing to Darwin’s views on the evolution of ethics, Hume’s views on ethics, and communitarianism.

Millstein Response: My interpretation doesn’t rely on any of those traditions.

I do appeal to Darwin as a scientist for interpretive purposes regarding **interdependence** but I also draw on contemporary scientific work (as well as philosophical argumentation) to defend the concept.

Perhaps these can be seen as appeals to authority, but I believe they are no different to the citations to scientific work that NVL rely on throughout the course of their book.



Charles Darwin

7 NVL criticisms of Callicott's interpretation of Leopold & responses, cont.

3. **NVL criticism:** There are problems with Callicott's second-order **principles for adjudicating conflicts** between individuals and communities.

Millstein Response: I do not endorse Callicott's second-order principles. Admittedly, adjudicating these conflicts is difficult; this is work-in-progress for me.

Here's what I've said in print so far (Millstein 2015):

- Following Don Marietta (1999), we **shouldn't ignore relevant sources of value by arbitrary fiat** simply to achieve one clear answer.
- Instead of thinking we can have an algorithm that will produce an answer to our complex questions with difficult tradeoffs, we might consider characterizing **processes** by which communities could make such decisions.
- The process might be **similar** to the one that Helen Longino (1990) describes for **balancing competing values in science**, notably including a diversity of perspectives. This suggestion is Leopoldian in spirit, considering his consultations with hunters, farmers, etc., in decision-making processes.

7 NVL criticisms of Callicott's interpretation of Leopold & responses, cont.

4. **NVL criticism:** Callicott invokes **group selection** in a problematic way.

Millstein Response: My interpretation does not invoke group selection.

5. **NVL criticism:** Callicott argues that Leopold adopts an outdated and discredited notion of “community,” based on that of Clements.

Millstein Response: I don't think Callicott uses this interpretation of “community” anymore, but as I indicated earlier, it's not Leopold's notion in any case.



From *A Sand County Almanac*

7 NVL criticisms of Callicott's interpretation of Leopold & responses, cont.

6. NVL criticism: If we update Leopold's community concept for the ecology of today, then we are **limited to the local scale**. At larger scales, interactions *other than* the common ecological ones (predation, parasitism, competition, etc.) matter most for species composition – at a medium scale, factors like speciation, migration, and extinction; at a continental scale, factors like geology and climate.

Millstein response: I think ecologists can and do reasonably speak of meta-communities, meta-meta-communities, etc. What is essential for Leopold's land ethic is **interdependence, not any particular manifestation of interdependence**. (Quoting Leopold: "All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts" (1949, 203)).

7. NVL criticism: Callicott misinterprets Hume.

Millstein Response: My interpretation does not invoke Hume.

NVL's discussion of ASCA's “practical guidance” (Ch. 10) and responses

NVL identify the following five claims as exhausting the practical guidance from Leopold himself in *ASCA*, apart from Callicott's interpretation of him:

1. We do not (and probably cannot) know enough to **tinker** precisely with ecosystems, designing them to get just the outcomes we want.
2. Regions **vary in resilience**, in the amount of human modification they can sustain **without losing their long-term fecundity**.
3. In all regions, the original, **naturally evolved biota maintain long-term fecundity**; introduced species may or may not.
4. In more fragile regions, a greater effort should be made to adopt agricultural and landscaping practices which mimic or approximate the original, naturally evolved ecosystems of the region.
5. In all regions, samples of the **original biota** (including all native species) **should be preserved**.

NVL's discussion of ASCA's “practical guidance” and responses, cont.

Regarding these five claims, NVL assert:

We think that statements ##2–5 above are **good general advice** with regard to the value of biodiversity and how to preserve it. But the advice reflects considerations of **instrumental value of biodiversity** in supporting ecosystem services, **rather than an ecoholist appeal to the intrinsic value of species and ecosystems**. And as far as practical guidance goes, statements ##2–5 are of the ‘be sure to pay heed to this in deciding on a general conservation strategy’ variety, rather than principles that give much substantive, practical guidance to policy makers (p. 352; emphasis added).

Millstein response: I basically agree that these five statements represent points that Leopold urged.

However, I think there is far more practical guidance to be found in his work and more to be said about each statement.

NVL's discussion of ASCA's “practical guidance” and responses, cont.

Perhaps most relevantly for the topic of biodiversity: what NVL characterize as “**long-term fecundity**,” Leopold called **stability** or **land health**.

- By **land health**, Leopold meant the ability of the land to cycle nutrients efficiently and continuously over long periods of time.
- This, Leopold hypothesized, **requires long and diverse food chains**, so that, e.g., nutrients would be “bound up” in organisms and not get lost to soil erosion.
- This would permit the land to continue to sustain life over time, making it capable of **self-renewal**.



From *A Sand County Almanac*

NVL's discussion of ASCA's “practical guidance” and responses, cont.

Thus, **preserving species** – one sense of preserving biodiversity – is key to preserving **land health** because it is key to preserving the long and diverse food chains (representing interdependencies between species) required for land health.

- But does this merely reflect “considerations of **instrumental value** of biodiversity in supporting ecosystem services”?
- Not if land communities have **intrinsic value** and land health is the characteristic of land communities that we ought to try to preserve.

So, let’s turn (very briefly) to the topic of intrinsic value.



From *A Sand County Almanac*

Intrinsic value arguments for ecoholism

In Chapter 9, NVL accuse many **proponents of intrinsic value** of ecological wholes of committing **various fallacies** (e.g., naturalistic fallacy) or of making other problematic arguments.

There is probably more to be said about each of these and whether Leopold makes any of these purported mistakes, but for reasons of time, I'll just focus on what NVL take to be **a good sort of argument: method of reflective equilibrium/coherentism** (Ch. 7):

- “In the method of reflective equilibrium, one repeatedly examines the consistency of one’s beliefs, making adjustments at one or both levels, until they are all in harmony with each other” (p. 219)
- **E.g.**, Singer’s argument in defense of **sentientism**, which appeals to common beliefs about interests to argue that sentient animals have them, too, on pain of inconsistency.

Intrinsic value arguments for ecoholism, cont.

It seems to me that we can understand Leopold's argument in "The Land Ethic" as using the method of reflective equilibrium and thus needn't attribute to him any of the mistakes in reasoning that NVL are concerned about. Here I reconstruct:

1. Given interdependence between humans, we accept the value of **human communities** and accept limitations on our actions (rules of conduct) to benefit and protect those communities; our ethical theories capture these rules of conduct.
2. Ecology shows us that we are not just interdependent with other humans, but also interdependent with other species and with abiotic components such as soil and water; together, we form **land communities**.
3. Therefore [consistency demands], we ought to recognize that our land communities have value and that we ought to accept an ethical theory that benefits and protects them – a **land ethic**.

(I hope that even without the textual evidence, this argument seems familiar to readers of "The Land Ethic").

Intrinsic value arguments for ecoholism, cont.

It might be objected that I have not shown that human communities have *intrinsic value*, and if they don't, then the reflective equilibrium argument (however legitimate) cannot support the intrinsic value of land communities.

This requires more argumentation than I can give here, but I think it is at least not implausible to think (we think) that human communities have intrinsic value, given the sacrifices that many human individuals make for the good of their communities.

If this is right, then reflective equilibrium argument for the intrinsic value of land communities holds.

Intrinsic value arguments for ecoholism, cont.

In the rest of Chapter 9, NVL question whether:

1. ecosystems have evolved interests
2. ecosystems are real physical entities
3. ecosystem health can be defined

With respect to 1, it's not clear why interests need to be *evolved*; in sympathy with Taylor (1981), all that seems required is that the entity in question can be **benefitted or harmed** (which raises the question of land health, #3).

With respect to 2 and 3, I have already sketched how land communities are real, physical entities (bounded by discontinuities in interactions and matter/energy flows) and how land health can be defined (the ability of the land to cycle nutrients efficiently and continuously over long periods of time).

Conclusion

Although my points here are surely in need of further elaboration, I have given a sketch of the case for why the concerns that Newman, Varner, and Linquist raise for a Leopoldian defense of biodiversity do not hold – once we have in hand a more textually accurate interpretation of Leopold.

On this revised interpretation that I have given:

- Leopold's land ethic is defended by the **method of reflective equilibrium**,
- showing us that the land communities that we are **interdependent** with have **intrinsic value**,
- necessitating preserving their (land) **health**, which in turn necessitates **preserving biodiversity**.

